NATIONAL INSTITUTE OF SIDDHA

Chennai – 47

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI - 32

A STUDY ON

VENPADAI

(DISSERTATION SUBJECT)

For the partial fulfillment of the
Requirements to the Degree of

DOCTOR OF MEDICINE (SIDDHA)

BRANCH III– SIRAPPU MARUTHUVAM DEPARTMENT

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Introduction...

INTRODUCTION

"மறுப்ப துடல் நோய் மருந்தென லாகும்
மறுப்ப துளநோய் மருந்தெனச் சாலும்
மறுப்ப தினிநோய் வாரா திருக்க
மறுப்பது சாவை மருந்தென லாமே."

- திருமூலர் 8000

The great Sage Thirumoolar has defined Medicine as that which cures physical and mental ailments, prevents disease and increases lifespan by postponding death.

Now WHO defines Health as the state of physical, mental, social and spiritual well-being.

Siddha system of medicine is an ancient one with spritual qualities. The word 'Siddha' comes from the word 'Siddham'. Siddham means 'Knowledge or Wisdom' or an object to be obtained on perfection or Heavenly Wisdom.

'Sirappu Maruthuvam' is a branch of Siddha system which deals with Kaya Karpam, Yogam, Varmam, Muppu, Thol Noigal (Dermatology) and Enbu Noigal (Orthopedics).

People with Venpadai (Vitiligo) develop white spots in the skin that vary in size and location. The spots occur when pigment cells, or melanocytes, are destroyed and the pigment melanin can no longer be produced.

Melanocytes normally occur throughout the skin, and in the hair follicles, mouth, eyes, and some parts of the central nervous system. In Venpadai, pigment cells can be lost in any of these areas.

Common sites of pigment loss are:

- Exposed areas: hands, face, upper part of the chest
- Around body openings: eyes, nostrils, mouth, nipples, umbilicus, genitalia

- Body folds: arm pits, groin
- Sites of injury: cuts, scrapes, burns
- Hair: early graying of hair of the scalp, beard or other areas
- Area immediately surrounding pigmented moles
- Choroid of the eye

Venpadai (Vitiligo) affects at least 1% of the population. About half of the people who develop this skin disorder experience some pigment loss before the age of 20, and about one third of all Venpadai patients say that their family members also have this condition.

Even though most people with Venpadai are in good general health, they face a greater risk of having hyperthyroidism or hypothyroidism, pernicious anemia, Addison's disease, alopecia areata, and/or uveitis.

Diseases of the skin account for a great deal of misery, suffering, incapacity and economic loss. Moreover they become a handicap in the society, because they have an impact on one's appearence. Venpadai is one such disease which affects the individual physically and mentally.

There are many misgivings about this disease in the minds of the public. People think that it is contagious and a type of Leprosy, because of the name "Venkuttam" and also that is due to sin and karma. So the author decided to use the term "Venpadai" instead of Venkuttam for this clinical entity. The same view has been expressed in Anubhava Vaithiya Deva Ragasiyam.

The clinical features of Venpadai are closely related to “Vitiligo” a modern clinical entity described under dermal disorders.

In the treatment of skin diseases, the Siddha system of Medicine has wonderful drugs. The author's choice for the clinical study is

Pusundar Rama Bana Mathirai - internal,

Manosilai Ennai - external.

Aim and objectives...

I. AIM AND OBJECTIVE

Venpadai (Vitiligo) bears social stigma. It affects at least 1% of the population

The clinical study of Venpadai was done in selected cases of both gender and treated in the Inpatient ward of Ayothi doss Pandithar Hospital of National Institute of Siddha, Chennai-47.

The aim and objectives are:

- To have an idea of the incidence of this disease with gender, age, occupation, social status, diet and seasonal variations.

- Collection and detailed study of various literatures dealing with definition, etiology, classification, signs, symptoms, prognosis, treatment and diet for Venpadai.

- To correlate the signs and symptoms of Venpadai with that of modern medicine.

- To establish the efficiency of diagnostic principles of Siddha system.

- To analyze Bio-chemical, Anti-oxidant and toxicological studies of the trail drug.

- To find out the efficacy of ***Pusundar RamaBana Mathrai*** (internal) and ***Manosilai Ennai*** (external) in ***Venpadai*** patients.

- To find out the adverse drug reactions if any.

Literature Review...

Siddha aspects
&
Modern aspects

II. REVIEW OF LITERATURE

1. SIDDHA ASPECTS

VENPADAI

Synonyms:

Venkuttam

Swetha Kuttam

Venthittu

Venpulli

Definition: (Iyal)

Venpadi is defined as the discolouration of the localised skin characterised by the appearance of the white patches of irregular shape of the epidermis of skin and sometimes hair also be involved.

Yugimuni, a great Sage, specified this as Swetha kuttam (venpadai) which is one among the eighteen types of kuttam.

தடிப்பாகத் தவளநிறம் போல் வெளுத்துச்
சர்வாங்கமும் வெளுத்தாற்றான் றிரும்பும்
மடிப்பாக மயிர்வெளுத்தா லசாத்ய மாகும்
வரிவுதடுவுள் ளங்கைக்குத ங்குய்யந்தான்
நெடிப்பாக நெருப்புப்பட்டது போற்புண்ணாய்
நிறமிருந்தா லசாத்தியமென்றே யுரைக்கலாகும்
வெடிப்பாக மேனியெல்லாம் வெளுத்து வீங்கில்
வெண்சுவேத குட்டமென்றே விளம்ப லாமே.

யூகி சிந்தாமணி - 800

நோய் வரும் வழி (Aetiology)

Siddha system attributes the aetiology of the disease to heredity, stress and strain, malnutrition and venereal exposure. No specific causes were mentioned for venpadai but general descriptions are given an extrinsic and intrinsic causes were attributed for the manifestation of venpadai.

1) According to Thirumoolar Karukkidai Vaithiya Nool

்வியாதியுண் மூவாறு விளங்கிய குட்டங்கேள்

சுயாதிக் கிரந்தி சுழன் மேகத்தாலாறும்

பயாதி மண்ணுளப் பலவண்டினா லெட்டும்

நியாதி புழுநாலாய் நின்றதிக் குட்டமே”

Six types are caused by kirandhi and megam.

Eight types are caused by insects in the soil.

Four types are caused by worms.

2) According to Yugi Chinthamani – 800

Excessive heat and cold, laziness, excessive sleep in day time, unbridled sexual indulgence, robbery etc. These habits are supposed to be the factors, which lowers the immune mechanism of the body (Iyarkkai vanmai) and makes the body liable for the disease.

Excessive intake of food which are hard to digest, imbalanced food, vomiting, frequent intake of food mixed with stone and hair. Prolonged mental depression, intention to spoil others, raping, greedy, abusing god & noble people, neglecting orphans and beggars, cursing the elders and so on. These are the causes mentioned by Yugi.

5) According to Dhanvanthiri Vaidhyam

1) Intake of unhygienic food
2) Abusing the elderly people like Siddhars and saints.
3) Blaming the worshipping ladies.
4) Sins committed in the previous birth.
5) Thinking of seducing chaste women.

These are the causes mentioned by Dhanvanthiri.

6) According to “Agasthiar Vaithyam”

்குயல்வாய் குஷ்டம் சயங்குன்ம நீரிழிவு சுரக்கிராணி

நீரடைப்பு பாண்டு மூல வாய்வு

கயல் வாயு வருங்கண்ணில் குத்தாய் கடிந்த தசவாய்வு

காணவாக முன் செய்த உயிர்களும் வினைதானே.''

Kuttam may be hereditary.

Apart from all other etiological factors kuttam is also considered to be one among the "Kanma noi".

7) According to "Eighteen siddhars naadi nool"

Excessive intake of acidic food stuffs leads to pallor and discolouration of skin are the causes said by Pathinen Siddhar Naadi Nool.

1. CLASSIFICATION –

According to Yugi vaidya chinthamani

According to Yugi Chinthamani, Swetha kuttam (Venpadai) is one among the eighteen types of kuttam.

முத்தாகும் குட்டந்தான் பதினெட்டுக்கும்

முனியான யூகிநான் சொல்லக் கேளாய்

புத்தாகும் புண்டரீக குஷ்டத்தோடு

பொருகின்ற விற்போடகக் குட்டமாகும்

பத்தாகும் பாமா குஷ்ட ஏகசர்ம குஷ்டம்

பரிவான கர்னகுஷ்டம் சர்மகுஷ்டங்

கித்தாகுங் கிருஷ்ண குட்டம் அவுதும்பர குட்டம்

கேடியான மண்டல குஷ்டமாகு மென்னே

குட்டமா மபரிச குஷ்ட மோடு

மருவலாங் கிடப குஷ்டந் சர்மதல குஷ்டந்

திட்டமாற் தத்துரு குஷ்ட மோடு

தக்கான சித்துமா குஷ்டஞ் சதாரு குஷ்டந்

துட்டமாஞ் சுவேத குஷ்டந்தன் னோடொக்கச்

சுயம்பான பதினெட்டுக் குட்டமாச்சே.''

1.Pundareegka kuttam 2.Virpotaka kuttam 3.Baama kuttam 4. Gaja saruma kuttam

5. Karna kuttam 6. Siguram 7. Krishna kuttam 8. Avudhumbaram 9. Mandala kuttam

10. Abarisa kuttam 11.Visarchika kuttam 12. Vibaathika kuttam 13. Kideeba kuttam

14. Sarmathala kuttam 15.Thethru kuttam 16. Sithuma kuttam 17. Sathaaru kuttam

18. Swetha kuttam.

2. According to Siddhar Aruvai Maruthuvam

Venpadai has been classified into 3 types on the basis of Mukkutram. They are,

1. Vaatha venpadai
2. Piththa venpadai
3. Kaba venpadai

3. According to Athma Ratchamirtha Vaidhya Sarasankiragamm

Venpadai is classified into 4 types:

1. Venkuttam
2. Senkuttam
3. Karunkuttam
4. Peru viyathi

Clinical Features of Eighteen Kutta Rogam

a.According to Dhanvanthiri Vaithyam

”மீக்கௌத் தோறுமெலுமோர் முகம் வெளுக்குமாகில்

நோக்கியல் மரிக்குஞ் சொன்ன வெண்குட்டமாமே”

When the colour of the face becomes white, it is called Venkuttam.

b.According to vaithya sarasangiragam

Circumscribed white coloured patches in sole, hands, lips, scalp, fingers and wrist joint with thickened border and gradually spreading in nature is known as “Venpadai”. According to this literature blood, muscle and adipose tissues are involved in this disease.

Discolouration of hairs, absence of normal skin texture when campared with the adjoining normal skin area and appearance of burned scar is not curable.

c. According to Pararasa Sekaram

1. Watery discharge
2. Gray colour
3. Foul smelling
4. Dryness of the scalp

Premonitory symptoms:

1. The skin appears glittering and rough
2. There is an excessive perspiration or no perspiration
3. Discolouration
4. Heat and itching of the skin
5. Numbness in some parts of the body.

d. According to Siddha Maruthuvam Sirappu

According to Siddha Maruthuvam Sirappu Venpadi has been classified into 4 types:

1. Vaatha venpadai
2. Piththa Venpadai
3. Kaba venpadai
4. Mega Venpadai

1. Vatha Venpadai

It is characterised by the presence of depigmented patches, which are dry, rough and reddish with some what pale-black in colour.

2. Piththa Venpadai

It is characterised by the presence of depigmented patches red in colour like lotus flower, spreading with burning sensation and loss of hairs on that area.

3. Kaba Venpadai

It is characterised by the presence of depigmented patches white in colour like the flower of Thumbai (Leucas aspera), spreading with itching sensation and mild elevation of skin.

4. Mega Venpadai

It is due to the venereal disease. It develops in 4 to 6 months after the venereal exposure. Syphilis develops within four to six months after the venereal exposure. This venpadai develops initially in the nape of the neck and the adjoining spaces. It then gradually spreads to involve the shoulder joints and back of the trunk.

The clinical features of this type are clearly explained by the author of **"Siddha Maruthuvam Sirappu"** as follows:

Depigmented patches are small in number, pale in colour or light turmeric in colour or dark colour and margins marked by hyperpigmention. These lesions are circumscribed with 2mm to 3mm diameter or above. This correct picture of hypopigmented and hyper-pigmented skin seems to be more or less a multi eyed filter (sieve – like).

Females are more prone to this mega venpadai and the treatment takes longer period. Therefore anti-syphilitic therapy is mandatory in the early period of the treatment.

e. A classical work **"Madhava Nithanam"** classifies Venpadai as

Savithram - venpadai affecting muscular tissue

Kilesam - venpadai affecting the skin

Varunam - venpadai affecting the adipose tissue

These types are not having any pathological discharge. Kilesam is classified on the basis of mukkutram and their features are as follows:

Vaatha kilesam	- Reddish white in colour.
Piththa kilesam	- Red coloured patches resembling the petal colour of lotus.
Kaba kilesam	- Mildly thickened white patches with itching.

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தீரும், தீராதவை

I) In Yugi Chinthamani – 800

குட்டந்தான் பதினெட்டில் சாத்தியந்தான்
சுறக்கேள் விற்போடக பாமா குட்டம்
திட்டந்தான் கெசசர்ம குட்டமொடு

கிருட்டின குட்டமவுதும்பர குட்டந்தானும்

திட்டமாந் தேத்திருக் குட்டமொடு

செய்சித்துமா குட்டங் கிடிப குட்டம்

தட்டந்தான் மிகுந்த சதாரு குட்டம்

சமகிருட்ண குட்டம் சாத்தியமா மென்னே”

Curable – 10

Virpodaga kuttam

1. Bama kuttam
2. Gaja sarma kuttam
3. Krishna kuttam
4. Avuthumbara kuttam
5. Thethru kuttam
6. Sithuma kuttam
7. Kideepa kuttam
8. Satharu kuttam
9. Sarmathala kuttam

Incurable –8 `

1. Pundareega kuttam
2. Karna kuttam
3. Sikura kuttam
4. Mandala kuttam
5. Abarisa kuttam
6. Visarchiga kuttam
7. Vibaathiga kuttam
8. Swetha kuttam

III)According to SIDDHA MARUTHUVAM –SIRAPPU

தீரும் நிலை

மயிர்களை வெளுக்கப் பண்ணாமல்

தடவில் மேடு பள்ளமில்லாமல்

சடைப்பின்னல் போல் இல்லாமல்

நெருப்பால் சுட்டாறிய வடுபோலும், வெளுக்காமலும் இருக்கும் வெண்குட்டம் தீரும்.

<u>தீரா நிலை</u>

மயிர்களை வெளுக்கச் செய்தும்

தடவில் மேடு பள்ளத்துடனும்

சடைப்பின்னல் போலும்

நெருப்பால் சுட்டாறிய வடுபோல் வெளுத்தும் இருப்பின் தீராது

குறி, எருவாய், உள்ளங்கை, உதடு என்னும் இவ்விடங்களில் தோன்றில் விரைவில் பரவினாலும் தீராது (*சித்த மருத்துவம் சிறப்பு பக்கம், 271).*

Incurable coditions:

- Lesions with whitened hair
- Lesions feeling rough
- Lesion appearing like white burnt scar
- Lesions found on genitalia, anus, palms and lips
- Lesions of fast spreading nature

<u>மூக்குற்ற வேறுபாடுகள் (Pathology)</u>

In Siddha system the manifestations of all diseases are the result of derangement of doshas that is vaatham, pitham and kabam.

Noi Nadal Noi Muthal Nadal Thirattu and Siddha Maruthuvam text reveals that the **Thridhosha Theory** is the human body is composed of 96 thathuvams (of constituent principle in nature including panchapoothams and threedhosam). The siddha system of medicine based on the thridhosha theory. This includes the three humors; they are vaatham, piththam and kabam. These three humours are primary and essential constitutional factors of human body. This factors exist in 1: ½ : ¼ ratio respectively in the normal body this humoural existence is responsible for the proper functioning of the body. Any alteration in the above ratio can cause disease in the body like, vadha disease, pitha disease and kabha disease.

- According to Siddha literature, eqilibrium of vatham, pitham and kabam is responsible for the normal colour and texture of skin by the way of equilibrium of black, yellow and white colour.
- According to Noi Naadal Noi Mudhlal Naadal thiratu Pitham kurai kunam and senneer kurai kunam result loss of colour and shining of skin

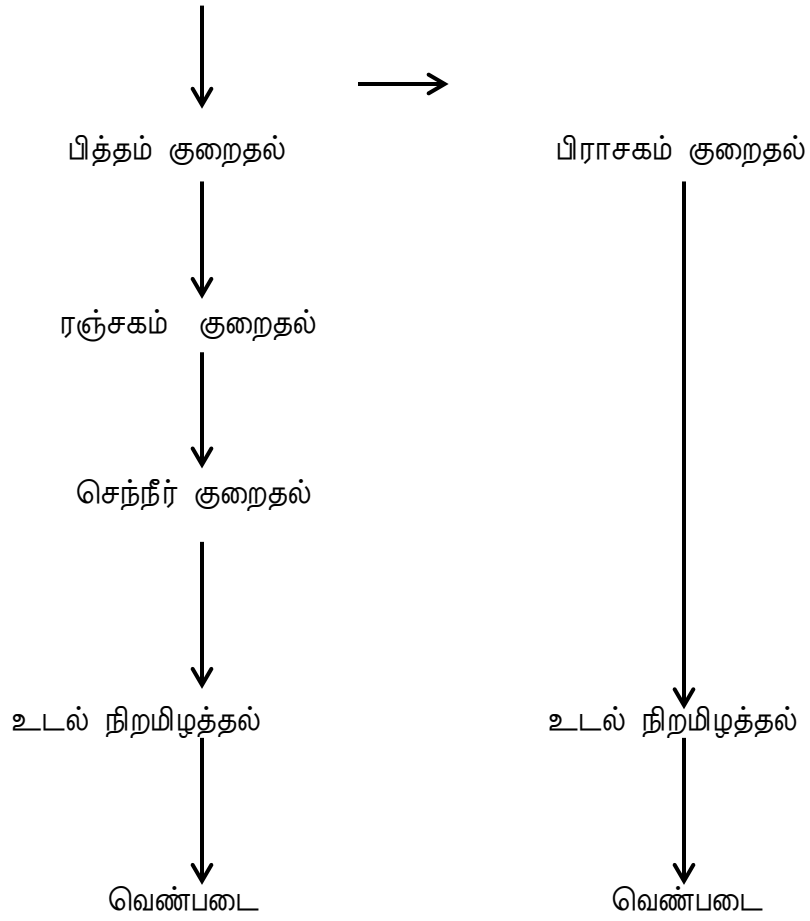
'Vathamalathu meni kedaathu'

-Theran

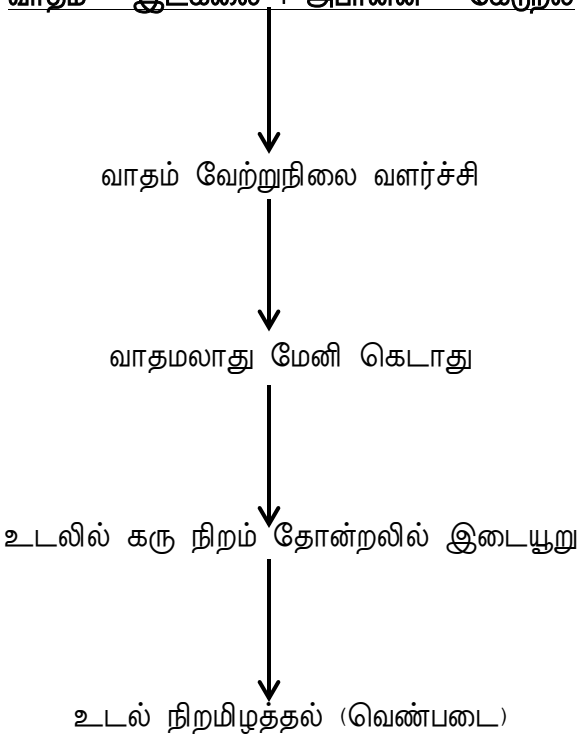
- Vatham is responsible for the black colour of skin. Derangaed vatham causes loss of black pigment resulting hypo/ depigmentation of skin.
- Pitham is responsible for the yellow/ red colour of skin. Pitham kurai kunam leads to Ranjaga kuraivu, Prasaga kuraivu and senneer kuraivu. Decreased Ranjagam, Pirasagam, and senneer result hypo/ depigmentation of skin.
- Kabam is responsible for the white colour of skin. Kabam lives in endocrinal systems and in sperm, etc. If it is affected it may be the heredity and endocrinal cause of venpadai.

நோய் நாடல்:

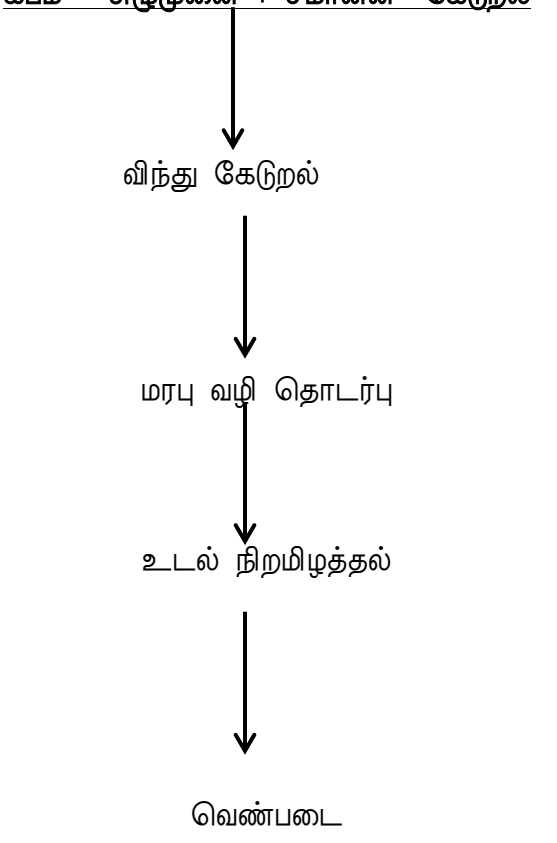
<u>பித்தம் = பிங்கலை + பிராணன்- கேடுறல்</u>



வாதம் = இடகலை + அபானன் – கேடுறல்



கபம் = சுழுமுனை + சமானன்– கேடுறல்



மருத்துவ வழிமுறை:

'மிகினும் குறையினும் நோய் செய்யும் நூலோர்

வளிமுதலா வெண்ணிய மூன்று"

-திருக்குறள்

According to siddha system, the main aim of the treatment is to cure udarpini (physical illness) and manapini (mental illness). Treatment is not only for complete healing but also for the prevention and rejuvenation.

In Siddha medicine the line of treatment consists of

1. Kaappu (prevention)
2. Neekkam (treatment)
3. Niraivu (rejuvenation of well being)

1 Kaapu

As per siddha science, even at the time of conception some defects may occur in the fertilised emrbyo forming the basis for the manifestation of certain constitutional disease later.

To prevent and expiate the misdeeds of the kanma, planting of young trees, establishing garden laying roads and pathyway, digging well and ponds for public use, constructing temples, donating ornaments to poor children must be done

2.Neekkam (treatment):

The three doshas which organise, activate, regularise and integrate the bodily structure and their functions are always kept in a state of balance by thought, word deed and food. The imbalanced doshas are balanced by administrating a laxative/ pugative/emetic/eye application and also through the appropriate systemic therapy.

Siddha system of Medicine is based on Mukkutra Theory and hence the treatment is mainly aimed to bring down the three dhoshas to its equilibrium state and there by restoring the physiological condition of three thathus.

"*விரேசனத்தால் வாதந்தாழும்* "

According to the siddha texts the laxative/ purgatives should be given before starting the trial to normalize the deranged Doshas to normal. So the author has prescribed a purgative, Karudan Kizhangu Ennai15ml with hot water in the morning.

The trial drugs

1. ***Pusundar Rama Bana Mathirai*** -1(B.I.D) with palm jiggery
2. ***Manosilai Ennai***– external.

3.நிறைவு (Rejuvenation)

Physical, psychological, social and economic rehabilitation and reassurance of individuals is known as Niraivu.

பத்தியம்:

"பத்தியத்தினாலே பலன் உண்டாகும் மருந்து
பத்தியங்கள் போனால் பலன்போகும் - பத்தியத்தில்
பத்தியமே வெற்றிதரும் பண்டிதர்க்கு - ஆதலினால்
பத்தியமே உத்தியென்று பார். "

- தேரையர் வெண்பா

During diseased condition diet restrictions or pathiyam should be strictly followed. These are prescribed to normalize the deserved dosham and to potenciate the drugs.

Diet:

Food stuffs that normalize the vaatha, pitha dhosha to the normal physiological level have to be consumed.

Patients were strictly instructed to avoid all non-vegetarian food except goat's meat.

Patients were advised to avoid the Sesban, Brinjal, Kaar arisi, Green plantain, Bitter gourd, Pickles, Tamarind, Food items which are enriched with alcohol, Vitamin C rich fruits and vegetables like lemon, goosberry, orange, etc.

They should take vegetables and green leafy vegetables rich in copper. And also the patients were advised to take more Germinated grams, Dates, Figs and powder of Fenugreek regularly.

Habits

Using of soaps and detergents should be avoided and they are advised to take neutral value pH soaps for bath purpose.

Management of Venpadai

According to siddha basic science the purgatives was given to the patients for normalizing the of derange dhodam.

The patients were advised to use green gram powder instead of soap and other detergents. Also the patients were advised to avoid allergic substances which are allergy to the particular individuals.

Sirappu Maruthuvam

In Venpadai, patients were advised to observe pranayamam, yoga and asanas for the fast cure and prevention of recurrences.

Pranayamam :

It is a form of Kayakalpa method and by practicing this, one can prevent many diseases. This is given by the verse.

ஏற்றி இறக்கி இருகாலும் பூரிக்கும்
காற்றைப் பிடிக்கும் கணக்கறிவாரில்லை
காற்றைப் பிடிக்கும் கணக்கறிவாளர்க்கு
கூற்றை உதைக்கும் குறியதுவாமே"

- திருமந்திரம்

All the 40 patints were strictly advised to do the regular practice of

- Oomkara Pranayamam,
- Naadi Suthi Pranayamam

&

- Sleeping Pranayamam.

These techniques were very helpful to relieve the stress and strain of the patients. Also it increases alertness, memory and maintain a clear mind.

Yogasanam

Keeping the body steady and motionless in a particular posture for a specific time is known as Yogasanam. This is totally different from the ordinary exercise. Yoga rejuvenates both body and the mental set-up unlike exercise which tones only the muscles.The common benefits of yoga are:

It tones up the internal organs

It prevents obesity and disease

It maintains normal circulation to all the organs of the body.

It increases alertness, memory and also maintains a clear mind and prevents and cures some disease. Asanas which were advised to the patients were:

- Padmasanam,
- Vajraasanam,
- Machasanam,
- Amarntha kokkasanam,
- Patha Hasthasanam,
- Dhanurasanam
- Sarvangasanam
- Gayiruvanakkam (suryanamaskkaaram)

These asanams help to prevent and cure skin diseases. These techniques were very helpful in relieving the stress and strain of the patients.

கன்ம நீக்கம் (Expiation)

்வையடா செவ்வந்தி முளரிதானும்

வாகான கிணறுகளும் சாலை சோலை

செய்யடா தன்னைப் போ லுருத்தா னொன்று

தெய்வதல மதில் வைத்துச் சாத்தார் பூசை

செய்யடா சிவபூசை விசேடவோமஞ்

செகந்தனிலே மண்டலந்தான் வேதியருக்கன்னஞ்

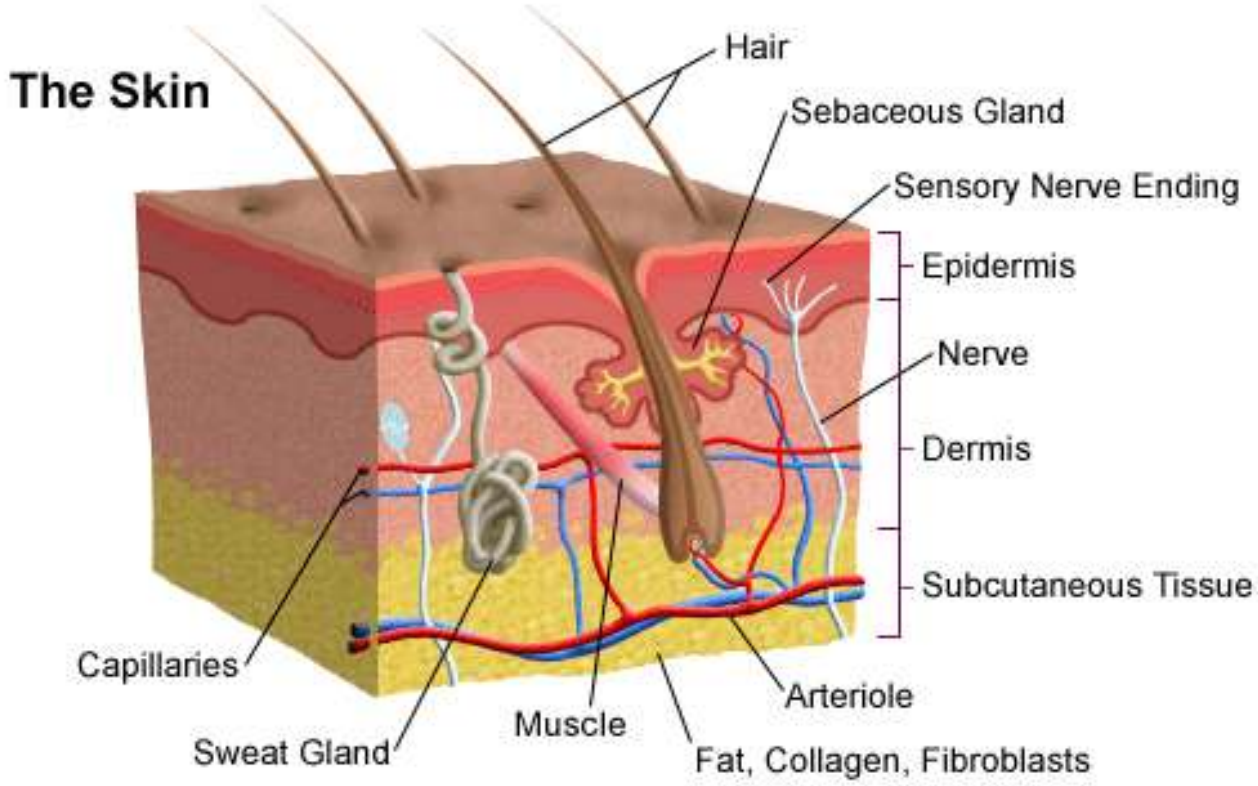
செய்யடா நெய்விளக்கோ ராயிரந்தான்

செயமாகச் செய்திடவே நிசமதாமே’

- அகத்தியர் கன்ம காண்டம், பாடல் 78

To expiate the misdeeds of the kanma, planting of young trees, establishing garden, laying roads and pathyways, digging wells and ponds for public use, constructing temples, donating ornaments to poor children etc must be done.

Modern aspects...


The Skin
Hair
Sebaceous Gland
Sensory Nerve Ending
Epidermis
Nerve
Dermis
Subcutaneous Tissue
Capillaries
Sweat Gland
Muscle
Arteriole
Fat, Collagen, Fibroblasts

2. MODERN ASPECTS

Skin Anatomy

The human skin is the outer covering of the body and is continuous with the mucous membranes in the region of the mouth, nose, urogenital organs and the anus. In an adult the skin surface measures 1.5. to 2 m^2 while the thickness of the skin varies from fractions of a millimeter to 4 mm. The thickness of the epidermis varies from 0.06-0.9 mm to 0.5 – 0.6 mm. The thickness of the subcutaneous fat varies considerably. Some area is devoid of fat while in others (on the abdomen and gluteal regions). It is several centimeters thick. The mass of skin an adult accounts for approximately 5% while together with the subcutaneous fat for about 10 to 17.7% of the total body mass.

The colour of the skin may change because the amount of the pigment in it varies under the effects of external and internal factors.

The skin surface is covered with hairs over a great area. The areas devoid of hairs are the lips, the palms and soles, the palmar surface of the hand and the plantar surface of the toes, the glans penis, the inner surface of the prepuce and the inner surface of the labia marjoram and minorum.

Facts about the skin:

The skin is the body's largest organ, covering the entire body. In addition to serving as a protective shield against heat, light, injury, and infection, the skin also

- regulates body temperature.
- stores water and fat.
- functions as sensory organ.
- prevents water loss.
- prevents entry of bacteria.

Skin Histology

The skin develops from two germinative zones. The ectoderm which is represented by the epidermis (the most superficial skin layer) and the mesoderm (the middle embryonal layer) represented by two layers namely the true skin, or dermis (the middle layer) and the subcutaneous fat or hypoderm the deepest skin layer.

The boundary between the epidermis and dermis and dermis forms a wavy line because of the presence of skin papillar (special out growth on the surface of the true skin). The spaces between which are filled with epithelial processes.

Melanin layer of Skin

Specialized Epidermal Cells

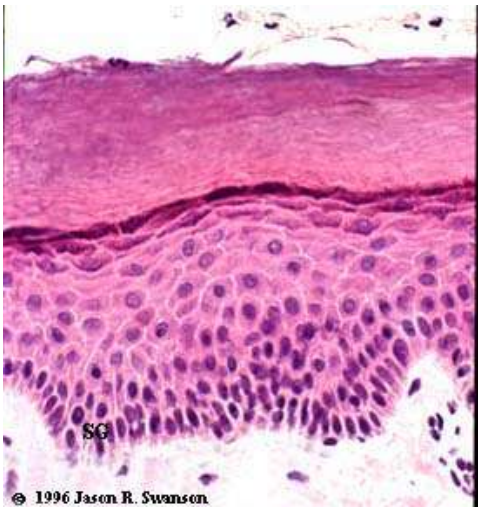
There are three types of specialized cells in the epidermis.

- The melanocyte produces pigment (melanin)
- The Langerhans' cell is the frontline defence of the immune system in the skin
- The Merkel's cell's function is not clearly known

Epidermis

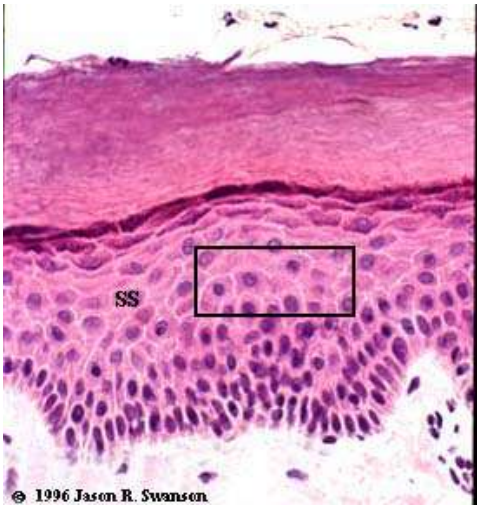
The epidermis is the most superficial layer of the skin and provides the first barrier of protection from the invasion of foreign substances into the body. The principal cell of the epidermis is called a keratinocyte. The epidermis is subdivided into five layers or strata, the stratum germinativum , the stratum spinosum, the stratum granulosum, the stratum lucidum(not seen in this photomicrograph) and the stratum corneum in which a keratinocyte gradually migrates to the surface and is sloughed off in a process called desquamation.

Stratum germinativum



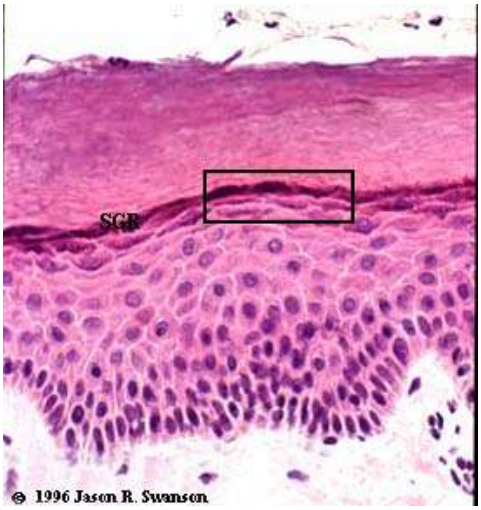
The stratum germinativum provides the germinal cells necessary for the regeneration of the layers of the epidermis. These germinal cells are separated from the dermis by a thin layer of basement membrane. After a mitotic division a newly formed cell will undergo a progressive maturation called keratinization as it migrates to the surface.

Stratum spinosum



The cells that divide in the statum germinativum soon begin to accumulate many desmosomes on their outer surface which provide the characteristic “prickles” (seen on the close-up view) of the stratum spinosum, which is often called the prickle-cell layer.

Stratum granulosum

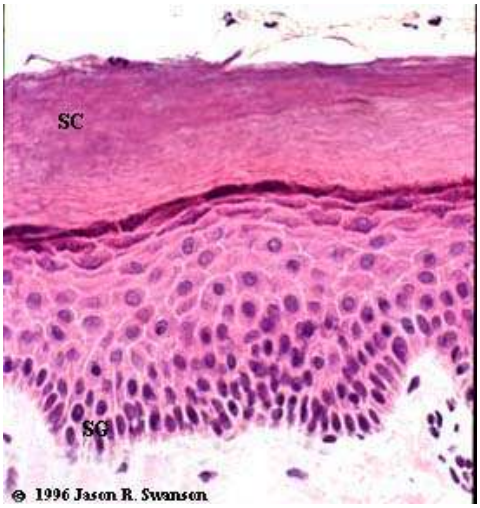


The progressive maturation of a keratinocyte is charcterized by the accumulation of keratin, called keratinization. The cells of the stratum granulosum accumlate dense basophilic keratohyalin granules (seen on the close-up view). These granules contain lipids, which along with the desmosomal connections, help to form a waterproof barrier that functions to prevent fluid loss from the body**.** The cells that divide in the statum germinativum soon begin to accumulate many desmosomes on their outer surface which provide the characteristic “prickles” (seen on the close-up view) of the stratum spinosum, which is often called the prickle-cell layer.

Stratum Lucidum

Epidermis varies in thickness throughout the body depending mainly on frictional forces and is thickest on the palms of the hands and soles of the feet. The stratum lucidum is normally only well seen in thick epidermis and represents a transition from the stratum granulosum to the stratum corneum.

Stratum corneum



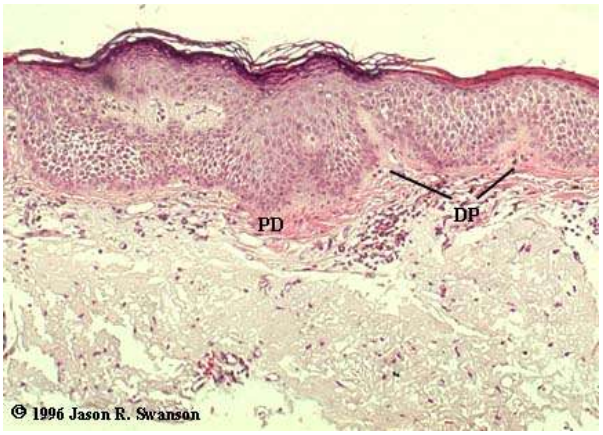
As a cell accumulates keratinohyalin granules, it is thought that rupture of lysosomal membranes release lysosomal enzymes that eventually cause cell death. The dead and dying cells filled with mature keratin form the stratum corneum. The deeper cells of the stratum corneum retain their desmosomal junctions, but as they are pushed to the surface by newly forming cells of the stratum germinativum, the dead cells gradually break apart and are lost, a process called desquamation.

Dermis

The dermis assumes the important functions of thermoregulation and supports the vasular network to supply the avascular epidermis with nutrients. The dermis is typically subdivided into two zones, a papillary dermis and a reticular layer. The dermis contains mostly fibroblasts which are responsible for secreting collagen, elastin and ground

substance that give the support and elasticity of the skin. Also present are immune cells that are involved in defence against foreign invaders passing through the epidermis.

Papillary dermis



The papillary dermis contains vascular networks that have two important functions. The first being to support the avascular epidermis with vital nutrients and secondly to provide a network for thermoregulation. The vasculature is organized so that by increasing or decreasing blood flow, heat can either be conserved or dissipated. The vasculature interdigitates in areas called dermal papillae. The papillary dermis also contains the free sensory nerve endings and structures called Meissner's corpuscles in highly.

Vascular system of Skin:

Vascular system of the skin is formed of several networks of blood vessels. Large arterial vessels stretch from the fascia through the subcutaneous fat and give off small branches to the fat lobules. On the boundary of the dermis and hypoderm, they divide into branches which stretch horizontally and anastomose with one another. A deep arterial plexus of skin forms, which gives rise to branches supplying the holes of the sweat glands, the hair follicles and the fat lobules. The epidermis is devoid of blood vessels. The most powerful network of blood vessels is located in the skin of the face, palms, soles, lips, genitals and in the skin around the anus.

Lymphatic system of the Skin:

The lymphatic system of the skin forms a superficial and deep network. The superficial lymphatic network arises on the papillary layer as blind rounded dilated capillaries between which there are numerous anastamosis. The second network of lymph vessels is in the lower part

of the dermis and already has valves. There is a network of wide loops forming lymphatic plexus and deeper parts are continuous with lymph trunks.

Skin Physiology

The skin and external nucleus membranes separate the human organism from the environment and accomplish a variety of functions. Normal functioning of the skin and its appendages of high significance for the organism activity as a whole and has a positive influence on its general condition.

The skin not only responds by its adptative reactions to the different effects of the external (exogenic) environmental factors, but is also very sensitive to changes in the various body organs and systems and is often the first to signal the development of a pathological condition by different changes in its function. Consequently though the skin is an independent organ, it at the same time is in a constant dynamic connection with the external environment and with all the organs and systems of an adult and child. The skin communicates with the organism by means of the nervous system, circulation and endocrine glands. The skin takes an active part in protein, carbohydrate, fat, water mineral and vitamin metabolism.

Etiology and Pathogenesis of skin diseases

There are many causes of the development of various skin diseases, sometimes these causes may be related to unconditioned stimuli because their action always and in all individuals evokes a definite reaction of the skin and is a local response of the whole organism to the damaging effects of the stimulus. Examples of such stimuli are concentrated acid and alkaline solution, which produce chemical burns, large doses of radiant energy, eg. : X-rays, which cause specific skin lesions, the action of high temperatures on a limited skin area (thermal burns) or the effects of low temperature etc. In most cases, however a combination of several factors inducing the pathological process is necessary for a skin disease to develop.

Vitiligo

The name ‘vitiligo’ is derived from the Latin word skin eruption, victim meaning a blemish (spoil the beauty of) happens to be a synonym for it.

White skin is the literal meaning of leucoderma, derma being derived from the greek words, leucas and dermis. Leucas means white and dermis means skin.

Celeus was the first Roman physician of the 2nd century to coin the word vitilligo, because the disease resembles the white patches of a spotted calf (vitelus).

Vitiligo is characterized by the presence of non-pigmented areas of irregular shape, which develop on the epidermis of skin and hair. In this condition there is absence of deficiency of melanin, a dark pigment of the skin produced by melanocytes under the stimulation of the sun light and possibly, under the control of a melanin stimulating hormone of the hypophysis.

It is also regarded to develop through eczema scar, prick by injection needle, injury by burn or from other accidents, by friction of foot, wearing tight clothes. It has also been observed in persons who have suffered serious illness due to typhoid, jaundice, liver diseases, diabetes, worms, constipation and diarrhoea.

Definition

Vitiligo is a disorder of the skin especially due to loss of pigment without any disturbances and textural alterations.

A condition due to failure of melanin formation in the skin produced sharply demarcated, milky white patches with Hyperpigmented borders.

But Leucoderma is an acquired not inherited (incurred as a result of factors acting from or originating outside the organism). Condition with localized loss of pigmentation of the skin. Inheritance means an acquisition of characters or qualities by transmission from parent or off spring.

An extremely common depigmentary disorders of great medicosocial signficance among the dark people aetiology uncertain association with variable penetrance, no age is exept, both sexes. A symptomatic puncture linear, oval, circular or irregular, discrete or confluent depigmented and or hypopigmented macules on an otherwise normal skin is confined to mucocutaneous functions dermatomal unilateral or bilateral, symmetrical or asymmetrical generalized or universal over laying hair retain pigment or turn white, no automatic or sensory disturbances, sun burn or chronic solar damage in longstanding cases, impredictable and capricious course, stationary self healing or progressive.

It is quite clear that vitiligo is due to some derangement in the pigment metabolism resulting in appearance of white patches in the skin. It is hard to say whether the site of derangement is usually general or local, but the main affected part is the skin, which is the most exposed part of the body. It can be examined by naked eye and can furnish a lot of information about the person and the disease. In certain cases the changes are not clear. Hence the studies of the skin structure and its physiology are essential for proper assessment.

Epidemiology

Vitiligo is an acquired idiopathic depigmentary condition, which though worldwide in distribution is most common in India, Egypt, and other tropical countries. It is a source of great social embarrassment of dark-skinned people. If affects all age groups with no predilection to either sex.

Gross Anatomical Changes in Vitiligo

Vitiligo represents an acquired patchy loss of pigments of the skin. There are no gross changes seen except irregularly demarcated depigmented patches of varying size, usually surrounded by hyper pigmented skin. These are seen distributed symmetrically or asymmetrically at various parts of the body.

Histopathalogic Changes in Vitiligo

Marked histological changes do not occur in cases of vitiligo. All the layers of the epidermis and dermis appear normal except a few changes which can be seen after special stains.

In the affected area the basal cells and the keratinzing cells of the other layers of epidermis do not contain melanin pigment granules in them. The contrast can be seen at a junction of the normal and vitiligenous areas of the skin, especially by silver staining or DOPA reaction. The pigment cells, the melanocytes are not seen in the affected area but they are present in the adjacent normal skin. At the border of the patches of vitiligo the melanocytes often appear large and posses long dendritic process filled with melanin granules. Electron microscopic studies confirm the absence of melanocytes in areas of long standing vitiligo.

There are collections of monomuclear cells at dermo epidermal junction at the border between vitilliginous and normal skin. These cells are predominately small lymphocytes. In the

long standing cases where the skin has become thick and scaly, varying amount of keratosis is seen.

Melanin

Melanin – Dervied from the Greek word Melas, meaning black.

Melanin is endogenous nonhaemoglobin derived or brown black pigment (formed). When the enzyme tyrosinase catalyses the oxidation of tyrosin to dihydroxy phenylalanine (DOPA) in melanocytes.

Distribution

It is widely distributed in the body but peculiarity enough it is limited only to those structures which have got an ectodermal origin, for skin, hair, choroid coat of retina and substanita nigra of the brain.

It is formed from tyrosine by oxidation metabolism and polymarization.

Pigmentation of the Skin

The colour of the skin may be brown or even black according to the amount of pigment present.

Even in white races most parts of the skin contain brown pigment granules in the deepest layers of the germinative zone of the epidermis.

In dark races they are more abundant and extend through out the whole zone.

Functions

The function of melanin in the choroids coat is mainly to convert the eye ball into a perfect dark chamber. Since nervous tissue is derived from ectoderm, the melanin in the substantia nigra may represent the vestigial remnants of the melanin forming properties.

Melanin is the great protector of the skin against the actinic rays of the sun.

Melanin Formation

Melanin whenever it is found is formed in the local cells by the enzyme tyrosinase (or) melanase. The mother substance, upon which the enzyme acts, is a tyrosine derivative (DOPA) believed to be formed in the adrenals. The broad of melanin synthesis from the oxidation of phenylalanine or tyrosine are as follows.

1. Tyrosine ⟶ DOPA ⟶ DOPA quinone

2. DOPA – quinone ⟶ 2-Carboxy 2, 3 – dihydro – 5, 6 – dihydroxyindole

⟶ 2 – Carboxy – 2, 3 – dihydro – indole – 5, 6 – quinone ⟶ 5, 6 Dihydroxyindole.

3. 5, 6 Dihydroxyindole ⟶ Indole - 5, 6 Quinone ⟶ Melanin

Melanin formation in both human and amphibian skin is augmented by the hormone known as intermedin or melanocyte – stimulating hormone (MSH) secreted by the pars intermedia of the pituitary gland. Adrenocartico tropic hormone (ACTH) secreted by Anterior Pituitary has melanocyte – stimulating activity similar to MSH although to a much lower degree. In addision's disease ACTH is secreted in a large amount and there is brownish black pigmentation of the exposed parts of the skin eg. Hands, feet etc., and mucous membrane.

Melatonin extract from bovine pineal gland, causes concentration of melanin near the nuclei of melanocytes in frog and as a result of this the skin becomes paler. Its role in the human is not known. MSH causes the serum copper to rise and this is accompanied by inner case in the melanin formation. Diminished formation of melanin is seen in albinism and leucoderma. In melanotic sarcoma, melanin may be found in the urine.

Etiology – Vitiligo

Melanocytes in areas of depigmented skin are destroyed and the cause is unknown. Anti-melanocytic anti-bodies directed against intra cellular components of melanocytes have been shown. The presence of organ specific auto immune disease occurs in about 10% of patients. Such conditions are more common in their families than in a normal population.

A neurogenic defect has been postulated for the rare dermatomal pattern of vitiligo which affects principally the limbs.

It is a feeling of many dermatologists that vitilligo is multifactorial malady. Genetic predisposition is an important; its influence varies form 10 to 35%. Auto – immunity has been blamed but in reality, it is a reaction pattern to drugs infections and toxin but not a cause for whole melanocyte system is defective. Important known causative factors are:

Nutritional – defects in copper, proteins and vitamins in diet, digestive upsets like amoebiasis, helminthics, chronic diarrhoea, dysentery etc.,

Endocrines – Association with thyrotoxicosis and diabetes.

Trophoneurosis and autonomic imbalance – emotional stress and strain.

Infections and toxic products, Enteric fever ill health, focal sepsis.

Drugs and chemicals – like quinines, guano furacin, amylphenol, chlorthiazide broad spectrum antibiotics and chloroquin.

Vitiligo has assured epidemic proportions in several parts of India especially Gujarat and Rajasthan. Chemicals are known to inhibit melanogenesis, enzymatic actions and several chain biochemical reactions. They can also cause interference with nutrition of the tissues. Hence tie up of the two chemicals and nutrition may provide the answer. Role of food adulterants, industrial chemicals and dyes, contaminating water and foods may be guess work at this stage but may prove to be ultimate causes.

Auto immune thyroid disease is one of a group of organ specific auto immune diseases that include pernicious anemia, Addison's disease and hypo para – thyroidism.

Hereditary Factors

Hereditary disorders are caused by defective genes which are transmitted form one generation to the other. Depending upon the mode of inheritance of the same disease in other members of the family. The clinical manifestation as a rule, appear early in life, but these may be delayed if the patient can effectively compensate the defect. Since it is not yet possible to correct the abnormalities of the gene, there is no curative treatment for this disease.

Heredity is one of the factors supposed to be related with venpadai to some extent.

Familial incidence has been reported in 7.5 to 21% in India and 33 to 40% in western countries.

It is every day knowledge and observation that emotional factors affect the skin as shown by the blushing of embracement, the pallor of fear and the pallor or redness of range, depending on the subject and his emotional state. Experiments have demonstrated that emotional that emotional stage can affect the following.

Which are direct relevance in the etiology of certain skin disorders.

Control of vascularity of the skin.

Control of sebaceous gland secretion.

Influencing the degree of oxidation.

Influencing the tendency of pruritus.

There is due to the causative factor of this disease, Venpadai from the following basic facts. It is generally considered to be a trophoneurosis. Psychological factors are known to be responsible for the precipitation and aggravation of the disease.

Psychology of Vitiligo Patients

A few basic facts regarding the disease as follows: are known to be responsible for the precipitation and aggravation of this disorder.

1) This disease attaches a social stigma.

2) Inferiority complex immediately following the start of disease, the patient thinks himself inferior to those with whom he was at par or excelled for so long. Naturally, at the beginning the individual tries to hide the patches of lesion and when fails in this effort, the individual often feels shy of friends and relatives.

3) Idea of reference whenever he sees persons talking at a distance, he thinks it is definitely about him and his disease, which is not generally the fact

4) When the patient feels his disease is incurable he becomes gradually depressed and it may even lead to suicide.

5) **Psychosis :** As the patient tries to feels shy of the surrounding environment, he may gradually feel more and more lonely and withdrawn, ultimately plunging in to a state. Such a patient may have dilution of suspicion / doubt that his or her spouse is indulging in adultery, thus bringing in material disharmony.

6) **Anxiety :** As the disease spreads it may give rise to a state of acute anxiety and insomnia, mixed with depression.

Pathology:

Chemically melanin pigment is a group of chromo proteins with coloured prosthetic groups, which is derived from the precursor tyrosine in the following way, Tyrosine Tyrinase Dihydroxy phenylalanin (DOPA) Melanogenase Melanin (Dopa oxidase).

Melanin + Protein = Melano protein

In the skin, the pigment is produced by the melanocytes of their precursor melanoblasts. The melanoblasts are supposed to be derived from the cells of neuro ectodermal origin during the embryonic life. After birth, these cells migrate to their definitive position. The melanocytes appear as clear cells within the basal cell layer of the epidermis and show dendritic processes after special staining. These processes come in contact to similar process of other melanocytes and epithelial cells through which the melanin pigments are donated to the basal cells of epidermis. The dermis of normal skin also shows macrophages containing melanin pigments known as melanophores, which are incapable to produce the melanin pigments.

Both the melanocytes and melanoblasts contain the enzyme melanogenase or Dopa oxidase, and they are able to convert dihydroxy phyenylalanine into melanin and such cells are called DOPA positive.

In Behl's practice of Dermatology, it is shortly described. A defect in enzyme tyrosinase is held responsible for vitiligo. According to some, it is a metatarin; a substance secreted at nerve endings inhibits tyrosinase, thus interfering in pigment formation. DOPA staining shows that melanocytes are deficient. In active cases mononuclear hugging at the junction of the lesion and normal skin is a prominent feature.

Causes of Hypo pigmentation

Generalised depigmentation is found mostly in albinos. In this case, the characteristic dendritic melanocytes are present in the skin, but they are unable to produce melanin pigment due to defective tyrosinase activity. In albinis, the skin looks milky white, the hairs are pale looking and the iris is transparent. This generalized pallor is also noticed in panhypopituitiarism, male eunuchoidism and phenyl ketonuria.

Localized depigmentation is often noticed in the skin of patterned leucoderma. The white patches on the skin may be quite extensive and the condition is inherited as an autosomal dominant character.

Sometimes sharply defined focal depigmented areas are found on skin of persons suffering from vitiligo. In the affected areas, melanocytes are absent and there is no trace of melanin. The condition is an acquired on and shows some familiar tendency.

Vitiligo in patients in whom the disease spreads very fast or those having halo-navi or malignant melanoma is believed to be based on auto-immune mechanisms, where auto antibodies or sensitized lymphocytes are supposed to act on the melanocytes. Trauma on the skin including that produced by scratching can lead to depigmentation of the skin even when it does not lead to ulceration. Leucoderma is also commonly seen on the flames of ladies wearing tight petticoat strings where the prolonged pressure is presumed to lead to depigmentation. Sometimes vitiligo can be caused by the action monobenzyle either of hydroquinone which is present in the slippers, gloves (or) other articles made of rubber or used as a depigmenting agent in the form of an omitant for pigmentary disorders. Recently vitiligo has also been observed to occur from plastic slippers as well as plastic ‘bindis’.

The lesions are usually not present at birth, but can appear at any time thereafter. They consist of a symptomatic depigmented macules of various shapes and sizes while the skin otherwise is quite normal. Most of the lesions are completely depigmented, but some may show only hypopigmentation in certain areas. The borders are usually well demarcated and may sometimes by hyperpigmented. These lesions may be located on many part of the body including the mucous membranes and may vary in extend from a single small lesion to complete or almost complete involvement of the body. The course of the disease is quite variable spontaneous

repigmentation of lesions or lesions keep on increasing in size for some patients the lesions become static and stay.

However most people with vitiligo have no other autoimmune disease. Vitiligo may also be hereditary, that is, it can run families. Children whose parents have the disorder are more likely to develop vitiligo. However, most children will not get vitiligo even if a parent has it, and most people with vitiligo do not have a family history of the disorder.

Clinical features :

- In this condition patches of skin lose their pigment and become perfectly white, though no other changes take place in them and particularly there is no scalling.
- Vitiligo may occur in either sex and at any age.
- The white patches may appear on any part of the skin but commonest on the face, neck, hands and wrist, lower abdomen and thighs and may be precipitated by trauma to the skin.
- They may be of any size or shape and are usually though not always, roughly symmetrical.
- They slowly increase in size until large areas of the skin are completely decolourished.
- The small remaining patches of normal skin may be mistaken for pigmented areas. The mistake may be avoided by remembering that the vitiligo areas have convex margins and the normal areas thereofore have concave ones.
- When vitiligo occurs on a hairy area such as eyebrows or pubis the hair on the white patch may also become white.
- The depigmented areas are sometimes surrounded by an excess of pigmented in the immediately adjoining skin but this appearance is often illusory and the result of visual contrast.
- Vitiligo is most noticeable in the summer when the normal skin is tanned by the sun. The white areas having not protected pigment are easily made red and sore by exposure to sun or artificial ultraviolet light.
- Vitiligo sometimes disappears spontaneously after months or years but more usually the conditions spreads slowly and may eventually involve nearly the whole of the skin.

- ❖ It is characterized by completely depigment macules and patches of varying size and shapes.
- ❖ In these conditions patches of skin loss of colour, there is no other structural change.
- ❖ Early lesions may be pale white and ill defined. At this stage, wood's lamp helps to confirm the diagnosis. Patches enlarge slowly and may affect the whole body, at this involvement is very seldom completely.
- ❖ Any part of the body can be affected but the sites of predilection are the face, dorsa of fingers and hands, wrist and the legs.
- ❖ Involvement of mucous membrane especially the lips are not uncommon; it can precede cutaneous involvement by years.
- ❖ Hair may or may not become depigmented in vitiliginous areas.
- ❖ Patients skin is susceptible to even minor trauma, it heals with depigmentation.
- ❖ At time lesions develop along the distribution of a peripheral nerve, zosteriform vitiligo. It is interesting sometimes to see a bunch of hair burning in that area of skin.
- ❖ Occasionaly, vitiligo develops around pigmented moles – 'Gals naevus'.
- ❖ The onset is slow and the course insidious but enigmatic. It may continue to increase slowly or come to a half and then increase again. It is reported that the malady usually starts and increasing in the summer months in northern India.
- ❖ Haemoglobin content of the blood is low and sometimes intestinal parasites and infections can be detected. Patients' complaint of easy fatiguability.

Clinical Criteria for Classification on Vitiligo

Stage of Clinical Features

Vitiligo

Active (V1)

i) New lesions developing

ii) Lesions increasing in size

iii) Border ill defined

Quiescent (V2)

i) No new lesions developing

ii) Lesion stationary in size

iii) Border hyperpigmented and well-defined.

Improving (V3)

i) Lesions decreasing in size

ii) No new lesions developing

iii) Border defined and signs of spontaneous regimentation (follicular and peripheral)

Zosteriform: Unilateral distribution of lesions, preferably along the course of nerves.

Besides typing the stage of disease, it is useful to decide the variety (acral, Vulgaris, Zosteriform). Severity (localized or extensive) and acuity (insidious or galloping) of vitiligo.

Diagnosis:

1) The distribution, the age of onset and the hyper pigmented border will suggest the diagnosis.
2) It is usually apparent. In doubtful and early case, Wood's lamp is great help in diagnosis.
3) Usually in macularleprosy, seborrhoeides, pityriasis versicolour and nevoid condition, its assistance is called for.
4) In piebaldism the lesions are present at birth, are usually confined to the head and trunk and rarely show a hyperpigmented border.
5) Careful examination of the texture of the unpigmented skin should exclue lichen sclerosus and scleroderma.
6) Post-inflammatory leucoderma, which is frequent in the darker races, shows an irregular mottling of hyper pigmented and hypopigmented blotches.
7) Hypomelanosis of the affected skin is commonly seen in pityriasis alba, producing slightly scaly areas with rather ill defined edges of children's faces.
8) Hypopigmented, slightly scaly macules are seen in pityriasis versicolor.
9) Vitiligo areas are milky white while other lack this milky white colouration.
10) Stationary patches are well-defined and have hyperpigmented borders.

11) Sensations are normal, so is texture unless the patches have been irritated with treatment.
12) Absence of scaling, crusting and itching help to eliminate seborrhoeids and pityriasis versicolor.

13) These areas often fluorescence a golden yellow when examined under a Wood's lamp. The hypomelanotic macules in leprosy are anaesthetic.
14) Examination of the skin in long wave UVR helps distinguish whether there is total depigmenation (as in Vitiligo) or not. It may also detect areas of depigmenation not easily seen in ordinary daylight, as well as detecting a lemon-yellow fluorescence seen in some cases of pityriasis versicolor.

Prognosis

It has improved considerably in recent years because of better understanding of etiological factors and advances made in theraphy. In the extensive trial undertaken by the author, it was found that the progress of the disease. 85% of cases were improved and 15% of cases were not improved but in static condition. Analyses of cases which have failed to respond have usually shown the following features:

1) Poor nutritional state or digestion, use of broad – spectrum antibiotics over long periods. Emotional stress and nervous debility.
2) Presence of vitiligo on resistant sites like the hands and the feet, front of wrists, the elbows, the waist, the eyelids and lips.
3) Depigmented hair in vitiliginous areas.

Cause of Localised Hypopigmentation

Vitiligo	Destruction of melanocytes; common; acquired, multiple sharply defined nonpigmented patches any where
Pityriasis versicolor	Superficial fungus infection leading to disturbance in pigment production common multiple pale scaling patches on trunk
Pityriasis alba	Mild patchy eczema of the face in children causing a disturbance in pigment production.
Leprosy	One or several pale macules on trunk or limbs that are hypoaesthetic.
White macules of affecting tuberous sclerosis	Uncommon development of anomaly CNS connective tissue and skin; several "maple leaf" shaped hypopigmented macules.
Postinflammatory hypopigmentation	After inflammatory skin disease (after eczema or trauma to the skin; irregular in shape and in depth of pallor).

Naevous anaemicus	Rare developmental solitary white patch uaually on trunk; thought to have vascular basis.
Chemical toxicity	May look very like vitiligo; seen in workers in rubber industry exposed to paratertiary benzyltoluence.

Differential Diagnosis of the important Depigmentary Disorders

10	Distinguish Features	Albinism	Naevus Depigmentosus	Vitiligo	Leprosy	Pityriasis
	Age	Congential	Congential	Acquired at any age	Any age	Any age
	Distribution	Complete (or) partial	Unilateral	Any area	Any area	Trunk, Neck and Face
	Course	Stationary	Does not increasing in size or changing shape	Progressive	Progressive	Progressive worse in mansoon and summer
	Hyperipig mentary Border	Nil	Nil	Present	Inflammatory	Nil
	Heredofamilial	Hereditary	Not herediotry	Nil	Nil	Nil
	Otherfeatures	Hair and eyes may be affected	Nil	Nil	Anesthesi a thickned nerves, nasal, bleeding slit smear and biopsy	Furfurace ous like dandruff, scaling in head macules and large patches fungus on microscopic examination

Treatment

In many cases the onset of venpadai and periods of active extension of pigment loss occasionally seem to be related to periods of severe physical or emotional stress. So from this, it is understood that mental helath is very much important in treatment.

Therefore before treating the patients with the drug it is necessary to make the patient mentally fit. The mental fitness of a patient chiefly depends on his family so that the family members aware that it is just depigmentation of the skin and neither it is contagious nor any dangerous disease.

In 6% of those who had perinicious anaemia the haemoglobin content in blood is low. So the patients' nutritional state has to be increased as high as possible. This is very particular when venpadai is active and progressively increasing.

Highly nutritious food like spinach, pomegranate, cheese, butter, milk, almond, germinating grams and food rich in tyrosinase to be added.

Vit-C (Ascorbic acid) must be avoided in diet, since in the formation of melanin, tyrosine, plays an important role. But in the metabolic pathway of tyrosine a metabolic error happens due to the presence of vitamin C (Ascorbic acid). If this error happens continuously the tyrosine cannot be absorbed by the body and is excreted through urine.

P.Hydroxy phenyl pyruvic acid —(Metabolic error / (Tyrosinosis) / Ascorbic acid)→ homogentistic acid

In the absence of Ascorbic acid the metabolic error can not occur and normal tyrosine metabolic pathway takes place and melanin is produced without any difficulty.

P.Hydroxy phenyl pyruvic acid correct metabolic.

Absence of Ascorbic —(Pathway)→ acid p-hydroxy phenylacetic acid & para hydroxy -phenyl lactic acid

- *Bio – chemistry – Saradha subramanian*

Diet and restrictions:

- Occupation
- Cosmetic things
- Diet

During bathing – the powder of Bengal gram and green gram or any other herbal products can be used.

If any one above is the reason for allergy it must be avoided.

- Vinegar, cooking soda, food enriched with alcohol must be avoided. These items may promote bleaching of skin pigment.

- Using soaps and detergents also promote bleaching the skin.
- Copper and zinc content vegetable and drugs tablet such as cooked greengram or Bengal gram at least one time a day.
- The role of copper in skin pigmenation can be well understook in terms of necessity copper for tyrosinase activity. Loss of pigments has been repored in acutre zinc deficiency. Also reported in vitiligenous skin, zinc and copper contents are decreased.
- Venpadai is also commonly seen on the flanks of ladies pressure is presumed to lead to depigmentation.
- Loose of melanin pigment from the skin often occurs, following wound healing scar formation commonly lead to depigmentation.
- Irritant cosmetic things allergy.
- Rubber slipper, gloves etc. Presence of Monobenzyle ether of hydroquinone in the slipper, gloves or other articles of rubber arvirritate the sking and produce depigmentating disorder (*Pathological basis of disease, P-1274).*

Bio-chemical, Anti- oxidant and Toxicity studies of the test drug was carried out in C.L. Baid Metha college of Pharmacy, Thorapakkam, Chennai.

The patients were treated with

1. ***Pusundar Rama Bana Mathirai*** -1 B.I.D. with Palm jaggery
2. ***Manosilai Ennai*** – 30 ml (external).

At the time of discharge all the fourty patients were advised to attend the out patient department for follow up study.

Materials & Methods...

III. MATERIALS AND METHODS

The study on Venpadai was carried out in the Ip and Op Department of Sirappu Maruthuvam in Ayothidoss Pandhithar Hospital, National institute of Siddha, Chennai – 47.

The disease "Venpadai" has been dealt in the Siddha Maruthuvam - Sirappu as one among the eighteen types of kuttam. Patients were selected according to the clinical features as mentioned in Venpadai.

1. Selection of the patients:

For the clinical study 40 cases of venpadai were selected. 20 cases were admitted in the Inpatient ward and 20 cases in Op Department of Sirappu Maruthuvam at Ayothidoss Pandithar Hospital of National Institute of Siddha, Chennai – 47

Sex : Both Sexes

Age : Between 13 to 70

2. Clinical Manifestations:

In this study a detailed clinical history was taken from the patients. The following features were seen in the patients admitted for the trial.

- Depigmented patches of varying size and shape.
- Discoloration of hair (may or may not be present).
- Itching (may or may not be present).

3. Aetiological factors:

The seasonal variations and precipitating factors like emotional stress trauma and climatic variations were enquired.

The socio economic status, family history and treatment history were carefully noted

4. Inclusion criteria

- Age between 13 - 70 years with the clinical manifestations mentioned above.
- Willing to give specimen of blood for the investigation when required.
- Willing to be admitted in the Hospital for 48 days or willing to attend OPD once in 8 days for 48 days.

5. Exclusion criteria

- Jaundice
- Leprosy
- Burns
- Pregnancy
- Lactation
- Heart ailments
- Any other serious illness

6. Withdrawal criteria

- Any drastic changes occurring in hematological / immunological findings during treatment period.
- Development of severe exacerbation.
- Occurrence of any other serious illness.

7. Trial drugs:

Purgation:

- ***Karudan kizhangu ennai – 30 ml*** at early morning in empty stomach

Internal drug :

- ***Pusundar Rama Bana Mathirai –1 (B.I.D)*** twice a day with palm jaggery

External drug :

- ***Manosilai ennai - 30 ml (external application)*** twice a day**.**

Trial period: 40 days

8. ASSESSMENT AND TESTS

Clinical assessment:

Initial lesion :

10. Anatomical location :

11. Colour : Blackish white (Grey) ☐ Pink ☐ White ☐

12**.** Size of lesion (length in cm/ mm) :

13. Shape : Irregular ☐ Round ☐ Dispersed ☐

14. Borders : Elevated ☐ Diffuse ☐

15. Swelling : Present ☐ Absent ☐

16. Erythema : Present ☐ Absent ☐

17. Sensation : Normal ☐ Paraesthesia ☐ Pain ☐

Numbness ☐ Burning ☐ Pricking ☐

18. Depigmentation of skin : Present ☐ Absent ☐

19. Scaling : Present ☐ Absent ☐

20. Crusting : Present ☐ Absent ☐

21. Oozing : Present ☐ Absent ☐

22. Maccules : Present ☐ Absent ☐

23. Papules : Present ☐ Absent ☐

24. Vesicles : Present ☐ Absent ☐

25. Pustules : Present ☐ Absent ☐

26. Palpation : Normal ☐ Smooth ☐ Rough ☐

Warm ☐ Cold ☐

RESULT:

CURED ☐ IMPROVED ☐ NO CHANGE ☐

9.SIDDHA ASPECTS

ENVAGAI THERVU

NEERKURI

NEIKURI

LABORATORY INVESTIGATIONS:

BLOOD:

TC (Cells/Cumm):

DC (%): N L M E

ESR (mm) : ½ hr 1 hr

Hb (gm%)

Blood Sugar (mg %):

Fasting Post Prandial

Serum Cholesterol (mg %):

Blood urea (mg %):

Serum creatinine:

SGOT

SGPT

II. **URINE:**

Albumin:

Sugar:

Deposits**:**

Epithelial cells :

Pus cells :

Red blood cells :

Casts/Crystals :

III. **MOTION:**

Ova -

Cyst -

Occult blood -

Pus cells -

9. CLINICAL TRIAL:

Venpadai patients satisfying the inclusion and exclusion criteria will be included for the trial. Informed consent will be obtained from the patients. A day before starting the trial of treatment to regulate the mukkutrams, purgation will be carried out by ***Karudan Kizhangu Ennai*** 20-30ml with hot water at early morning.

For OPD patients, the trail drugs will be issued for 8 days at a time. They will be asked to attend the OPD once in 8 days. Also, they will be instructed to bring back unconsumed trial drugs and return them during their next visit.

Tests will be carried out before treatment and at the end of the treatment. Photos will be taken before and after treatment.

11. FORMS

Form I – Selection proforma

It is used before admission of the patients to the trial

Form II – Assessment form

It is used once in 8 days during treatment.

12. ANALYSIS

- Improvement will be mainly assessed by comparing the photos taken before and after treatment.
- Quantitative parameters will be assessed by paired t-test.

Observation& Results...

IV. OBSERVATION AND RESULTS

1. Gender distribution
2. Age Distribution
3. Kaalam distribution
4. Occupational Status
5. Seasonal variations
6. Thinai
7. Dietary Habit
8. Socio-economic Status
9. Etiological Factors
10. Family History
11. Distribution of Thridosha
12. Udal Kattugal
13. Ennvagai Thervugal
14. Neerkkuri Neikkuri
15. Sites of lesion
16. Results after treatment

1.GENDER DISTRIBUTION :

GENDER	NUMBER OF CASES	PERCENTAGE
MALE	27	67.5
FEMALE	13	32.5
TOTAL	40	100

2.AGE DISTRIBUTION:

AGE (YEAR)	NUMBER OF CASES	PERCENTAGE
11– 20	9	22.5
21-30	8	20
31-40	11	27.5
41 – 50	3	7.5
51 – 60	5	12.5
61 – 70	4	10
TOTAL	40	100

3.KAALAM DISTRIBUTION:

Vatha Kaalam - 19 cases (47.5 %)

Pitha Kaalam - 20 cases (50 %)

Kabha Kaalam - 1 case (2.5 %)

4. OCCUPATIONAL STATUS:

OCCUPATION	NUMBER OF CASES	PERCENTAGE
STUDENT	12	30
FARMER	3	7.5
HOME MAKER	7	17.5
LEATHER INDUSTRY	2	5
TEACHER	2	5
ELECTRICIAN	2	5
TAILOR	1	2.5
SECURITY	1	2.5
ENGINEER	2	5
BUIDER	2	5
CARPENTER	3	7.5
BUSINESS	1	2.5
MECHANIC	2	5

5. SEASONAL VARIATIONS:

In Siddha system, a year is divided into 6 Paruva Kaalangal (seasons).

Out of 40 cases, 30 patients (75%) were admitted in Kaar Kaalam, and 10 patients (25%) were admitted in Koothir Kaalam.

6. THINAI:

Among the 40 patients, 1 (2.5 %) was from Kurunchi, 5 (12.5%) were from Marutham and 34 (85 %) were from Neithal thinai.

7. DIETATY HABITS(D.H.)

D.H.	NUMBER OF CASES	PERCENTAGE
Vegetarian.	5	12.5
Non-Vegetarian.	35	87.5
Total	40	100

8. SOCIO- ECONOMIC STATUS :

CLASS	NUMBER OF CASES	PERCENTAGE
POOR	8	20
MIDDLE CLASS	27	67.5
RICH	5	12.5

9. AETIOLOGICAL FACTORS:

AETIOLOGICAL FACTORS	NUMBER OF CASES	PERCENTAGE
HEREDITARY	2	5
ANEAMIA	27	67.5
UNKNOWN	11	27.5

10. FAMILY HISTORYOF VENPADAI (FH) :

FAMILY HISTORY	NUMBER OF CASES	PERCENTAGE
PRESENT	2	5
ABSENT	38	95
TOTAL	40	100

11. DISTRIBUTION OF THIRITHODAM:

a. VATHAM:

Viyanan & Samaanan affected in all the cases. Abanan was affected in 10 (25%) cases (constipation) and Koorman was affected in 2 (5%) cases (cataract).

b. PITHAM

Prasakam affected in all the patients (100%). Ranjagam affected in 95% of the patients.

- Ranjagam is responsible for the colour of blood
- Praasakam is responsible for the complexion of the skin.

Defect/ Decrease in Ranjagam & Praasakam leads to Hypo/ Depigmentation of skin ***(Pitham Kurai Kunam)***

c.KABAM:

Santhigam was affected in 10 (25%) cases. Sandhikam is responsible for the movements of joints. Among the 40 cases 10 were above the age of 40 years and they were suffering from Azhal keel vayu (Degenarative disease of old age).

12.UDAL KATTUGAL:

The Seven Thathus which constitute our body structure and help to maintain the normal physiological functions, get changed in Pathological conditions.

In the 7 Udal Kattugal Saaram (depression) and Senneer were affected in all the 40 cases (100 %).

- Decreased Senneer results in Hypo/ Depigmentation of skin ***(senneer kuraikunam).***

13.ENVAGAI THERVUGAL:

In Siddha system of Medicine, the eight types of investigative procedure were adopted for clinical approach and diagnosis. The investigations were done properly and observations were tabulated.

Among the 40 patients, Niram was affected in all the 40 cases (100 %). Vizhi in 2(5 %) and Malam in 10 (25 %) patients.

14. NEERKURI

NIRAM	NUMBER OF CASES	PERCENTAGE
STRAW	15	37.5
YELLOW	10	25
PALE YELLOW	15	37.5

NEIKURI THINAI:

NEIKKURI	NUMBER OF CASES	PERCENTAGE
VADHAM	32	80
PITHAM	5	12.5
KABHAM	3	7.5
TOTAL	40	100

15. SITE OF LESION:

SITE OF LESION	NUMBER OF CASES	PERCENTAGE
Multiple	29	72.5
Upper & Lower limbs	2	5
Lower limbs	3	7.5
Face	6	15
Total	40	100

16. RESULTS AFTER TREATMENT:

RESULTS	NUMBER OF CASES	PERCENTAGE
Cured	-	-
Improved	34	85
No change	6	15

Table Shows level of Hb (gm %) & Total RBC Count (Million / cu mm of blood) the 40 cases.							
S. No.	**IP /OP No.**	**NAME**	**Before Treatment Hb** gms %	**After treatment Hb** gms%	**Before treatment TRBC** Million/cumm	**After Treatment TRBC** Million/cumm	**Pigmentary Improvement at the end of treatment**
1.	1145	KALAIVANI	10.6	12.5	3.2	3.5	Improved
2.	1160	RANI	11.1	12.6	3.5	4	Improved
3.	1558	SAGUNTHALA	9.7	13.6	4	5	Improved
4.	1171	ANANTHI	10.6	12.8	3.5	3.8	Improved
5.	1196	ANITHA	10.4	12.3	3.5	3.7	Improved
6.	1207	SHANTHI	13.6	11.9	4.2	3.5	Improved
7.	1187	NIROSHA	13.4	14	4.2	4.6	No change
8.	1651	SRIDHAR	14	16	4.7	5	Improved
9.	1654	KUPPUSAMY	13.6	13.6	4.5	4.6	Improved
10.	1649	IYYAPPAN	13.6	14.2	4	5	No change
11.	1666	KARTHICK	11.7	11.9	3.8	3.8	Improved
12.	1673	EGAMBARAM	12.7	13.9	3.5	4	Improved
13.	1251	GEETHA	13.1	14.2	4.2	4.3	No change
14.	1253	MARAGATHAM	11	12.7	4	4.2	No change
15.	1796	PRABAKARAN	14.5	15.2	4	5	Improved
16.	1741	VINOTHKUMAR	14.5	15	4.5	4.9	Improved
17.	1793	KUMARAN	12.7	13.9	3.5	4.1	Improved
18.	1775	KARUNANITHI	14.5	16	4.6	4.6	Improved
19.	1677	GUNASEKARAN	15.5	16.6.	4.5	4.6	Improved
20	1746	SASIDHARAN	12.6	15	4.5	4.6	Improved
21.	AM8524	PONKODI	9.7	10.9	3.2	3.8	Improved

22.	AJ7679	SELVAM	11.6	15	3.7	5	No change
23.	AH758	KARUNAKARAN	11.6	15.2	3.9	4.3	Improved
24.	AK8997	CHAKRAVARTHI	11.1	15	3.7	4.3	Improved
25.	AK6932	SARASWATHI	10.2	12.6	3.7	4.3	Improved
26	AH6921	ARULANTHAM	11.1	14.2	3.7	3.9	Improved
27.	AM9595	JEYA KUMAR	13	13.5	4.3	4.4	Improved
28.	V6841	KOTHANDAM	9.7	9.3	3.2	3	No change
29.	AM4929	VARADHAN	11.6	16	3.2	5	Improved
30.	AJ3561	BALAKRISHNAN	11.1	14	3.4	4.7	No change
31.	AJ8123	PARTHASARATHI	13.1	15	4	5	Improved
32.	AM1741	RANJANI	11	12.5	3.2	.3.8	Improved
33.	AN950	JAYASEELAN	13.1	13.6	4.3	5	Improved
34.	AL8197	VIJAYA SARATHI	13.6	14.2	4.6	5	Improved
35.	AM4552	PARAMASIVAN	10	11.4	3.6	3.7	Improved
36.	AK9511	DHAMAODHARAN	11.5	13.2	3.4	4	Improved
37.	Q4866	VIVEK	10.3	13.2	3.4	4	Improved
38.	AJ3552	JEYA CHANDRAN	11.6	14	3.2	3.8	Improved
39.	AH2525	SANTHOSH	11.2	13.6	3.2	3.9	No change
40.	AM7227	SANTHIYA	10.6	13.2	3	3.8	Improved

Statistical analysis

Hb -Before treatment

Hb Before treatment	sex		Total
	Female	Male	
Below Normal	9	13	22
Normal	4	14	18
Total	13	27	40

Hb –After treatment

Hb After treatment	sex		Total
	Female	Male	
Below Normal	1	3	4
Normal	12	24	36
Total	13	27	40

Statistical analysis of Hb between Before and After treatment

Haemoglobin	Mean ± std deviation	T value	Signifcance
Before treatment	12 ± 1.55	-8.3	< 0.001
After treatment	13.68 ± 1.49		

There is significant difference between before and after treatment in Hb.

Statistical analysis of TRBC between Before and After treatment

Total RBC	Mean ± std deviation	T value	significance
Before treatment	3.8 ± 0.49	-6.73	<0.0001
After treatment	4.2 ± 0.53		

There is significant difference between before and after treatment in Total Red Blood Cell count also.

Statistical Analysis:

Paired t – test is used to determine the significant difference in Hb and TRBC in between Before and After treatment. P value 0.05 level is taken as significance.

Discussion...

V. DISCUSSION

Yugi vaidya Chinthamani describess Venpadai as ***SWETHA KUTTAM*** which is one among the eighteen types of kuttam. Ven (swetha) kuttam is a non-contagious disease that's why the author decided to use the term "***VENPADAI"*** instead of ***VENKUTTAM.***

The clinical entity of venpadai is more or less similar to that of vitiligo in modern medicine. It is an acquired idiopathic depigmentary condition and is characterized by completely depigmented macules and patches of varying sizes and shapes. Besides loss of colour there is no other structural change.

Anatomy and physiology of skin and aetiology, clinical feature of the disease etc., are discussed.

Author collected information largely from Siddha Maruthuvam- Sirappu, GuruNaadi nool, Thanvathri vaidyam and Agathiyar kanma kaandam in which the Siddha methods of diagnosishas been dealt. Before and after the course of treatment, the patients were subjected to laboratory investigations and photographs were taken.

LABORATORY INVESTIGATIONS :

BLOOD – TC, DC, ESR, Hb, TRBC, SGOT, SGPT, SAP, UREA, FBS, PPBS and Serum CREATININE

URINE – ALBUMIN, SUGAR AND DEPOSIT

NEERKURI & NEIKURI

MOTION– OVA, CYST AND OCCULT BLOOD

ETIOLOGY :

The causative factors of the disease can be found out from the history given by the patients, their diet, habits, occupation, mental stress and other signs and symptoms. According to the Siddha and modern science the etiology of the disease has been arrived at as follows:

- Nutritional deficiency of copper, protein, vitamins in diet.
- Gastro-intestinal problems like amoebiasis, helminthiasis, chronic diarrhoea and dysentery.
- Hereditary and autoimmune disorders.
- Thyrotoxicosis and diabetes.
- Drugs and chemicals like quinines, chlorthiazide, broad-spectrum antibiotics and chloroquine.
- Industrial chemicals and dyes.
- Infections and toxic products, enteric fever, ill health, focal sepsis.
- Chronic irritation
- Anemia
- Unknown etiology

The other depigmentary conditions like leprosy, syphilis, thyrotoxicosis, and burns were excluded.

GENDER DISTRIBUTION:

40 patients of both the gender were selected for the dissertation study. Among the 40 cases 27 (67.5%) were males and 13 (32.5%) were female.

AGE DISTRIBUTION:

9(22.5%) Patients were in the age group between 11-20, 8(20%) patients between 21-30, 11 (27.5%) patients between 31-40, 3(7.5%) patients between 41-50, 5(12.5%) patients between 51-60 and 4(10%) patients between 61-70,

DIETARY HABITS:

35 (87.5 %) patients were non vegetarians and only 5 (12.5%) were vegetarian.

According to Siddha literature, Non- vegetarian foods are the precipitating factors of skin diseases and it may be the cause.

SEASONAL VARIATION:

30 (75 %) cases were admitted to trial in Kaar Kaalam and 10 (25 %) Koothir Kaalam. Pitham increases in Kaar & Koothir Kaalam (Thannilai and Pira nilai valarchi), Vatham also increases in Kaarkaalam and it will come to its normal level at Koothirkaalam.

This disease acquired due to the decrease of Pitham and derangement of Vatham, so that it is the most favorable period which helped for the better prognosis in this study. Among the 40 cases 34 patients were improved.

THINAI:

34 (85 %) patients belonged to Neithal thinai, 5 (12.5 %) were from Marutham thinai and 1 was from Kurinchi.

In Siddha literature the Marutham is mentioned as disease free land among the five lands. Venpadai occurs in Marutham irrespective of the nature of the land and it may be due to various environmental changes in the life style and food habits.Maximum patients have from in and around Chennai which belongs to Neithal thinai.

REFERENCE OF MUKKUTRAM

1.VAATHAM

Abaanan affected (constipation) in 10 (25 %), koorman (cataract) in 2 (5%), Viyanan (Depigmentation / hypo pigmentation of skin) and Samanan affected in all the cases (100%)

2. PITHAM

In all the 40 (100 %) patients, praasakam and Ranjagam were affected.

- Ranjagam is responsible for the colour of blood
- Praasakam is responsible for the complexion of the skin.

Defect/ Decrease in Ranjagam and Praasakam leads to Hypo/ Depigmentation of skin (Pitham Kurai Kunam)

3. KABAM

Sandhigam was affected in 10 (25 %) patients.

Sandhigam is responsible for the movements of joints. Among the 40 cases 10 are above the age of 40 years and they also suffered from Azhal keel vayu (Degenarative disease of old age).

UDAL KATTUGAL:

Saaram and Senneer which are responsible for the colour of the skin were affected in all the 40 (100 %) cases.

- Decreased Senneer (Senneer Kurai Kunam) results in Hypopigmentation of skin.
- Decreased Saaram is the cause of depressive psychology of the patients.

ENVAGAI THERVUGAL:

Niram was affected in all the 40 (100 %) cases. In Venpadai, the colour of skin changes into white. Malam was affected in 10 (25 %) patients and vizhi in 2 (5%) patients (cataract).

MANAGEMENT:

In Siddha System before starting the treatment it is necessary to bring the Mukkutram to equilibrium. To normalize the deranged vaatham, viresanam (purgation) with

Karudan Kizhangu Ennaii– 15 ml with hot water was given in the early morning.

DRUGS:

Internal Medicine:

Pusundar Rama Bana Mathirai–1 (B.I.D) with palm jaggery

External Medicine*:*

Manosilai thylam – 30 ml

Patients were instructed to take the medicines regularly and apply the oil twice a day and to expose the affected parts to sunlight. Diet restrictions were imposed and followed.

These are the specific drugs for the dissertation work. The medicines were prepared by the author in the Gunapadam practical hall under the supervision of the teaching faculties of the National Institute of Siddha, Chennai – 47. Bio-chemical Analysis, Anti-oxidant study and Toxiological study of the test drugs were done in the C.L. Baid Metha College of Pharmacy, Thorapakkam, and Chennai-96.

The main reasons for choosing the drugs mentioned above as trial drugs are:

Venpadai is the disease that affects not only the skin (body) but also the mind. These patients face a lot of problems not only in their own families but also in the society. It leads them to mental depression and stress. It aggravates the clinical condition.

The treatment already available for venpadai is a long term one and does not fully cure the condition. Resorting to plastic surgery proves costly and it is not affordable to all the patients. Moreover the relapse of the disease at the site of surgery is common.

The trial drug is the best combination of herbs and minerals. Each content of the ***Pusundar Rama Bana Mathirai*** is specifically indicated for skin diseases, as described in Anuboga vaidya navaneetham- part 7, page- 73.

Summary...

VI. SUMMARY

- Venpadai has been chosen for the dissertation work by the author.
- Various literatures dealing with Venpadai have been collected from Siddha and modern text books.
- Preclinical analyses in toxicological and biochemical aspects were conducted for the trial drug ***Pusundar Rama Bana Mathirai***. 40 patients of both sex and in age group 13 to 70 were selected for the study.
- 20 cases were treated in Inpatient ward at least for 20 days and followed up in the out patient department after discharge. 20 cases were treated in the outpatient department for 48 days.
- All the details about the study and the drugs were informed to the patients in their vernacular language and consent forms obtained from them. Before starting the treatment, the blood samples of the selected patients were subjected to investigation and photographs of the lesions were taken.
- A day before starting the treatment purgation was given by administering ***Karudan Kizhangu Ennaii– 15 ml*** with hot water in the early morning to normalize the thridosha to equilibrium.
- From the second day onwards ***Pusundar Rama Bana Mathirai*** - 1 B.I.D. along with Palm jaggery internally and ***Manosilai Ennai for*** external use were given to the patients.
- Diet restrictions were strictly imposed during the treatment period. Every 8^{th} day the patients were assessed for clinical improvement and adverse effects. On the 48^{th} day the laboratory investigations and photographs were repeated. The improvement was assessed.
- During the course of treatment there were no adverse effects or unwanted drug reactions in GIT, RS, CVS and Excretory systems like nausea, mouth ulcers, abdominal discomfort, dyspnoea, cough, palpitation, raised blood pressure, dysuria/oligosuria and pedal edema. Only Skin Irritation occurred at the site of lesion when the external oil was applied. Because there is drug Piper nigrum, an irritant is the one of the ingredients of Manosilai Ennai which may be the cause of itching, burning sensation, and the development of blisters.

- 4 patients suffered from blisters which were developed after the application of external oil and they were advised to stop the external applicant temporarily. They were improved well when compared with the patients who were not at all developed any irritation in depigmented patches.
- 6 Patients suffered from itching and burning sensation while under the course of treatment. They were advised to reduce the duration of exposure to sunlight and then the symptoms were subsided with in a week.
- Mild irritation of depigmented skin was present in 28 cases. No history of irritation in 2 cases was noticed.

Conclusion...

VII. CONCLUSION

Venpadai may occur due to various causes and it leads to mental stress and strain. Hence it is one of the psychosomatic disorders. When the trial drug ***Pusundar Rama Bana Mathirai*** (internal) with palm jaggery was administered with ***Manosilai thylam (external)*** to the venpadai patients, it showed improvement in varying degrees in all the cases.

- The drugs along with yoga and pranayama showed good prognosis.

- The trial drugs showed no abnormal changes in Liver and renal function tests in patients at the end of treatment. Also in animal study, the trial drugs showed no toxicity and alteration in enzyme levels of Liver and renal function tests.

- The anti- oxidant activities of trial drug have a beneficial effect clinically to reduce the oxidative stress.

- Statistical reports showed the significant improvement in Hb and TRBC. At the end of treatment 85 % of patients had improved well. This proves the verse 'senneer kurai kunam results Hypo / depigmentation' of skin and when it comes to its normal level results as normal colour and complexity of skin.

- The patients who developed irritation in Depigmented/ Hypo pigmented patches got good prognosis.

- The patients who developed blisters after the application of external oil showed better prognosis at the end of treatment.

- The patients who did not at all develop any irritation in the Depigmented / Hypo pigmented patches poorly improved.

- The prognosis was bad in the patients with De / Hypo pigmented patches in palm, sole, lips and external genitalia which are said to be as incurable in the Siddha system of Medicine.

- The trial drug is more effective than other Herbal dugs. Repigmentation developed with in 48 days of treatment.

Annexure 1:

Preparation & properties of Trial Drugs...

உள்மருந்து : புசுண்டர் ராம பாண மாத்திரை

ஆதார நூல்: அனுபோக வைத்திய நவநீதம் பாகம்-7, பக்கம்-73.

சேரும் சரக்குகள் & குணம்:

I.

1. பாதரசம் (Purified Mercury) –

"விழிநோய் கிரந்தி குன்மம் மெய்ச்சூலைபுண் **குட்டம்**"

2. கந்தகம் (Purified Sulphur) –

"நெல்லிக்காய்க் கந்திக்கு நீள்பதிணெண் **குட்டம்**"

3. காந்தம் (Purified Magnetic Iron) -

"காந்தத்தாற் **சோபை**குன்மங் காமிலமேகம்பாண்டு"

4. துருசு (Purified Copper sulphate) –

"கா**ந்தி** தருந்துரிசு காண்"

5. பால் துத்தம் (Purified Sulphate of Zinc)

6. இந்துப்பு (Purified Rock salt)

7 .தாளகம் (Purified Yellow Arsenic sulphate)

"தாளகத்தின் பேருரைக்க தாலுகவுள்நோய் **குக்ஷ்டம்**

II.

8. சேராங்கொட்டை (Purified Semicarpus anacardium)-

"**குட்டங்** கயரோகங் கொல்லும் விடபாகம்"

9. எட்டிக்கொட்டை (Purified Strychnos nux-vomica) –

"கைக்கருப்பு சன்னி கடிவிடங்**குட்டூ**தை வலி"

10. கொடிவேலி (Plumbago zeylanica) –

"கட்டிவிர ணங்கிரந்தி கால்கள் அரையாப்புக்"

11. மஞ்சள் (Curcuma longa) –

"**பொன்னிறமாம்** மேனி புலானாற்றமும் போகும்"

12. வசம்பு (Acorus calamus) –

"தாம்பாங் **கிருமி**யிவையேகு மாசிவசம்பினையே"

13. கார்போகரிசி (Psoralea corylifolia) –

"வாதகப நமைச்சல் வன்சொறிசிரங்குமறுஞ்"

14. கோட்டம் (Costus speciosus)

15. ஓமம் (Carum copticum)

16. எள் (Sesamum indicum)

17. மாசிக்காய் (Quercus infectoria)

18. சாதிக்காய் (Myristica fragrans)

19. பூண்டு (Allium sativum)

20. கொள்ளுக்காய் (Tephrosia purpurea)

III.

21. தக்கோலம் –

“பாண்டுசுரம் போகும் பகரிற் பலஞ்சேரும்’’

22. அக்கிரகாரம் (Anacyclus pyrethrum)

IV.

23. முட்டை வெள்ளை கரு (egg white)

Preparation of Pusundar Rama Bana Mathirai:

I ல் உள்ள சரக்குகளையும் II உள்ள சரக்குகளையும் பொடித்து கலந்து கல்லுரலில் இட்டு கடப்பாரையால் 2 சாமம் இடித்து மறுநாள் III ல் உள்ள சரக்குகளை ஒரு படி நீரில் இட்டு கால் படியாக குறுக்கிய குடிநீரினை சிறுகச்சிறுக விட்டு 4 சாமம் இடித்து, பின் மூன்றாம் நாள் முட்டை வெள்ளை கருவை விட்டு 4 சாமம் இடித்து குன்றிமணியளவு

(520 mg) மாத்திரைகளாக உருட்டி நிழலில் உலர்த்தி எடுக்க வேண்டும்

அளவு:

1/2 - 1 மாத்திரை

தீரும் நோய்கள்:

ஈரல் புற்று, இடிபுற்று, குழிப்புற்று, அல்குல் புற்று, வெண்குட்டம், கருங்குட்டம், சூலை சூதகவாயு லிங்க புற்று, புண்.

பத்தியம்:

மருந்துண்ணும் போது மோரும் சோறும் உண்ண வேண்டும். 3 மாதம் வரை புணர்ச்சி கூடாது.

வெளி மருந்து: மனோசிலை எண்ணெய்

ஆதாரநூல்: குணபாடம் தாது ஜீவ வகுப்பு, பக்கம்-273.

சேரும் சரக்குகள் & பொதுக்குணம்

1.மனோசிலை (Purufied disulphidum bisulphuret of Arsenic realgar):

"கொடிய **குக்ஷ்டம்**
காய்ச்சல் நடுக்கலஜ கல்லியிரைப் புச்சிலந்திப்
பேசறுமனோசிலைக்கு பேசு"

2.தாளகம் (Purified Yellow sulphate of Arsenic):

"தாளகத்தின் பேருரைக்க தாலுகவுள்நோய் **குக்ஷ்டம்**
நீளக் குளிர்காய்ச்சல் நீடுகபம் - நாளகங்கொள்
துக்ஷ்டப் பறங்கிப்புண் சூழழுகண் மண்டைநோய்
கிட்டபடுபமா கிளத்து"

3.மிளகு (Piper nigrum):

"திமிர்வாதங்கிரந்தி புண்ணீரும் மண்ணவர்க்கும்
காந்தி மெய்வாதச்சலுப்பைக் காய்"

4.எருக்கு (Calotropis gigantea):

"எலிவிடங் **குட்ட**மைய மேருகிருமி
பலிசூலை வாயுவிடமந்தம்- மலபந்தம்
எல்லாமகலு மெருக்கிலையை கண்டால்
வில்லார் நுதலே விளம்பு."

5.எள் நெய் (Seasamum indicum):

"புத்தி நயனக்குளிர்ச்சிபூரிப்பு மெப்புளகஞ்
சத்துவங்கந்தி தனியிளமை- மெத்தவுண்டாங்
கண்னோய் செவினோய் கபாலவழல் காசநோய்
புண்ணோய்போ மெண்ணெய்யாற் போற்று."

Preparation of Manosilai Ennai:

தாளகத்தையும், மனோசிலையையும் பொடித்து, எருக்கஞ்சாறு, மிளகு மற்றும் நல்லெண்ணெயுடன் கலந்து அடுப்பேற்றி எரித்து கடுகு பதத்தில் இறக்க வடிகட்ட வேண்டும்.

பயன்பாடு:

மனோசிலை எண்ணெயில் சேரும் சரக்குகள் அனைத்தின் பொதுகுணத்திலும் குட்ட நோய் இடம்பெறுவதாலும், வழக்கு முறையில் மனோசிலை புகையும், தாளக மருதோன்றி கற்க வெளிபிரயோகமும் வெண்படை நோய்க்கு பயன்படுத்தப்படுவதால் இங்ஙனம் கூறப்பட்டுள்ள மனோசிலை எண்ணெயும் வெண்படை நோய் தீர்க்கும் என்பது வெள்ளிடை மலை.

Annexure 2:

Bio chemical analysis
Anti-oxidant &
Toxicological studies…

Index

1.0 MATERIALS AND METHODS

1.1 Test Drugs

The following medicine used in the study was processed by the methods prescribed in standard text books of siddha medicine.

Pusundar Rama Bana Mathirai was prepared by the method prescribed in the text book of siddha medicine Anuboga Vaidya Navaneetham, Part- 7, page 73. (Hakkeem P.M. Abdhulla Sayabu).

1.2 Preparation of drug for dosing

All drugs used for the study were suspended each time with 1% (w/v) solution of sodium carboxy methyl cellulose before administration.

1.3 Drugs and chemicals

Standard Drugs and fine chemicals used in these experiments were obtained from Sigma Chemicals company, U.S.A. Other analytical grade chemicals were obtained from S.d. Fine Chemicals Ltd., Mumbai.

1.4 Experimental animals

Colony inbred animals strains of wistar rats of either sex weighing 200 - 250 g were used for the pharmacological and toxicological studies. The animals were kept under standard conditions 12:12 (day/night cycles) at 22^0C room temperature, in polypropylene cages. The animals were fed on standard pelleted diet (Hindustan Lever Pvt Ltd., Bangalore) and tap water *ad libitum*. The animals were housed for one week in polypropylene cages prior to the experiments to acclimatize to laboratory conditions. The experimental protocol was approved by the Institutional Animal Ethical Committee (IAEC).

1.5 Acute oral toxicity study

Acute oral toxicity study was conducted as per the OECD guidelines (Organization of Economic Cooperation and Development) 423 (Acute Toxic Class Method). The acute toxic class method is a stepwise procedure with 3 animals of a single sex per step. Depending on the mortality and /or moribund status of the animals, on the average 2-4 steps may be necessary to allow judgment on the acute toxicity of the test substance. This procedure results in the use of a minimal number of animals while allowing for acceptable data based scientific conclusion.

The method uses defined doses (5, 50, 300, 2000 mg/kg body weight) and the results allow a substance to be ranked and classified according to the Globally Harmonized System (GHS) for the classification of chemicals which cause acute toxicity.

Wistar albino rats of either sex weighing 200-250 g were fasted overnight, but allowed water *ad libitum*. Since the formulation is relatively non toxic in clinical practice the highest dose of 2000 mg/kg/p.o (as per OECD guidelines "Unclassified") was used in the acute toxicity study.

The animals were observed closely for behavioral toxicity, if any by using FOB (Functional observation battery)

1.6 Repeated oral toxicity study

Repeated oral toxicity studies can be used to get additional information regarding the toxicity profile of a chemical. Repeated oral toxicity studies are defined as those studies where the chemical is administered to the animal for a period covering approximately 10% of the expected life of the animal. Usually, the dose levels are lower than for acute studies and allow chemicals to accumulate in the body before lethality occurs, if the chemical possess this ability.

Experimental procedure

The following experimental procedure was followed to evaluate the repeated oral toxicity study of RPS

Group I : Control animals received 1%CMC, 2 ml/kg/p.o. for 15days

Group II : ***Pusundar Rama Bana Mathirai*** in Palm jaggery at the dose Level of 500mg/kg/p.o. was given to rats for 15days

Body weight, food intake and water intake was recorded at two intervals with simultaneous observation for toxic manifestation and mortality, if any. At the end of 15days treatment all the animals were sacrificed by over dosage of ether anaesthesia. Blood was collected and used for hematological studies. Section of liver, kidney, and heart were dissected out and kept in 10% formalin for histopathological studies.

1.7 Biochemical studies

Aspartate aminotransferase (AST)

Aspartate aminotransferase was estimated using commercial AST kit (Span Diagnostics) by the method of Reitman and Frankel (1957).

Alanine aminotransferase (ALT)

Alanine aminotransferase was estimated using commercial AST kit (Span Diagnostics) by the method of Reitman and Frankel (1957).

Alkaline phosphatase (ALP)

Alkaline phosphatase was assayed using commercial ALP kit (Span Diagnostics) by the method of King (1934).

Cholesterol

Cholesterol was estimated using the commercial kit (Span diagnostics)

Urea, Uric acid and Creatinine

Urea, Uric acid and creatinine were assayed using the commercial kit (Span Diagnostics)

1.8 Haematological studies

Erythrocyte count

Erythrocyte count was estimated by Hemocytometer method of Ghai (1995).

Total Leukocyte Count (WBC)

Total Leukocyte Count was estimated by Hemocytometer method of John (1972).

Haemoglobin

Haemoglobin was estimated by the method of Ghai (1995).

1.9 Histopathological study:

Animals were sacrificed at the end of repeated oral toxicity study and tissues were processed for histopathological studies.

1.11 In Vivo Antioxidant study:

Samples of serum collected from rats treated with test drugs were assayed for GSH (Moron *et al* , 1979) and LPO (Yagi, 1976) and the results were compared with control group.

2.0 Results

2.1 Preliminary basic, acidic radicals and phyto-chemical studies

The qualitative chemical analysis and acidic, basic radicals' assay of the drugs showed the presence of phyto-constituents and minerals as depicted in (Table 1).

2.2 Acute oral toxicity study

PRBM at the dose of 2000mg/kg/po did not exhibit any mortality in rats. As per OECD 423 guidelines the dose is said to be "Unclassified" under the toxicity scale. Hence further study with higher doses was not executed.

2.3Repeated oral toxicity for 15 days

Test drug PRBM at the dose of 500 mg/kg/po when administered orally for 15 days in rats did not exhibit toxicity in haematopoeitic system and liver. However the drug exhibited an increase in uric acid level after the administration for 15 days (Tables 2 and 3)

2.4 Histopathological study

PRBM at the dose of 500 mg/kg/po daily administered for 15days did not show evidence of pathological lesions in the tissues tested (Plate 1).

2.5 Anti-oxidant activity

At the end of 15 days of repeated oral toxicity study when the plasma of drug treated animals was examined for GSH activity, the level of GSH activity was increased significantly ($p>0.001$) in test groups. On the other hand LPO activity of treated animals was decreased when compared to control (Table-6).

Discussion

The siddha formulation Pusundar Rama Bana Mathirai (PRBM) was tested for its reverse pharmacological and toxicological profiles in the experimental rats. ***The drug did not exhibit mortality at the highest dose of 2000 mg/kg/p.o***, As per OECD 423 guidelines the dose is said to be "Unclassified" under the toxicity scale. Hence further study with higher doses was not executed.

The preliminary phytochemical study revealed the presence of several phytoconstituents. ***The test drug answered for the presence of calcium, phosphate, ferrous iron, sulphate, and chloride, alkaloid, glycoside, sterois, protein, aminoacid, tannin, saponin, phenol, flavanoid, starch, reducing sugar, and unsaturated comound etc***.

Repeated oral toxicity study conducted for15days with the drug did not exhibit significant changes in blood counts and in Hb%.

The biochemical markers of liver function and kidney function tests did not show evidence of liver and kidney toxicity. There was no significant changes in biochemical parameters like blood Cholesterol, body weight, food, water intake and behavioral parameters.

Oral administration of PRBM for 15 days at the dose of 500mg/kg/po showed an decrease in LPO in serum and GSH showed an increase in the serum of the drug treated animals. The anti LPO activity and significant antioxidant activity of the drug is useful for the long treatment of diseases with the drug without producing side effects to free radicals injury.

Qualitative analysis of Acidic/Basic radicals and phytochemical constituents in test drug Nunakadugu (NK)

Procedure	Observation	Inference
Test for Calcium : 2 ml of extract is taken in a clean test tube. To this add 2 ml of 4% ammonium oxide solution.	No white precipitate is formed	Presence of calcium
Test for Sulphate : 2 ml of the extract is added to 5 % barium chloride solution.	White precipitate is formed	Presence of Sulphate
Test for Chloride : The extract is treated with Silver nitrate solution	White precipitate is formed	Presence of Chloride
Test for carbonate : The substance is treated with Conc. HCl.	No effervescence is formed	Absence of carbonate
Test for Starch : The extract is added with weak iodine solution	No Blue colour is formed	Presence of starch
Test for Iron (Ferric) : The extract is treated with glacial acetic acid and potassium ferrocyanide	No blue colour is formed	Absence of Ferric iron
Test for Iron (Ferrous) : The extract is treated with Conc. HNO_3 and ammonium thiocynate	Blood red colour is formed	Presence of Ferrous iron
Test for phosphate : The extract is treated with ammonium molybdate and conc. HNO_3	No Yellow precipitate is formed	Presence of phosphate
Test for Tannic acid : The extract is treated with Ferric chloride	Blue black precipitate is formed	Presence of Tannic acid
Test for Unsaturation : 1 ml of Potassium permanganate solution is added to the extract.	Does not get decolourised	Presence of unsaturated compound
Test for saponins: Dilute extract+ 1ml of distilled water shake well.	No Froth formation	Presence of saponins
Test for sugars : **Benedict method** ; 5ml of Benedict solution heated gently then add 8 drops of diluted extract then heated in a boiling water bath.	No colour change	Indicates the Presence of sugar

Molisch test; Dilute extract+2 drops of Molisch+3ml conc.H_2SO_4.	No Reddish violet zones appeared	Absence of carbohydrate
Test for steroids : Liberman Burchard test ; Dilute extract +2 ml acetic anhydride+conc.H_2SO_4 .	No Formation of red colour	Presence of steroids
Test for amino acids: Dilute extract +2ml of Ninhydrin's soln .	Formation of violet colour	Presence of amino acids
Test for proteins: Biuret method ; 1ml of dilute extract+1mlof5%$CuSO_4$+ 1%NaOH.	Formation of Violet colour	Presence of proteins
Test for Flavanoids : Dilute extract+ mg bits+2drops of conc.HCl and gently heated.	No formation of pink colour	Presence of Flavanoids
Test for phenol: Dilute extract+2drops of $FeCl_3$ soln.	Deep green colour is formed	Presence of phenols
Test for Tannins ; dilute extract +2ml of 10%lead acetate add.	No white precipitate formed	Presence of tannins
Test for alkaloids; Mayer's method;1ml of dilute extract + 1ml reagent. Dragendroff's method; 1ml of dilute extract+ 1ml of reagent.	Appearance of cream colour precipitate Appearance of orange colour precipitate	Presence of alkaloids Presence of alkaloids

Table 1

Preliminary acid, basic radicals and phyto-chemical screening of PRBM

S.No.	Constituents	PRBM
1.	Calcium	+
2.	Iron (Ferric)	-
3.	Iron (Ferrous)	+
4.	Sulphate	+
5.	Chloride	+
6.	Carbonate	-
7.	Starch	+
8.	Phosphate	+
9.	Tannic acid	-
10.	Unsaturated	+
11.	Reducing Sugar	+
12.	Alkaloids	+
13.	Steroids	+
14.	Protein	+
15.	Tannins	+
16.	Phenols	+
17.	Flavanoids	+
18.	Saponins	+
19.	Amino acid	+
20.	Glycosides	+
21	Sterols	+

(+) - present

(-) –Absent

PREM - Pusundar Rama Bana Mathirai

Table 2

Effect of Siddha Formulations (PRBM) on Haematological parameters on 15 days after the repeated oral dosing (500 mg/kg)

Groups	Hb (gm/100ml)	RBC (millions/cu.mm)	WBC (cells/cu.mm)	Differential leucocyte count (%)		
				Lympho cytes	Mono cytes	Granulo cytes
Normal	14.0 ± 0.34	5.31 ± 0.35	5885 ± 9.44	77.06 ± 3.89	6.30 ± 1.04	16.70 ± 4.27
PRBM (500mg/kg/p.o)	14.68 ± 0.70 ns	5.88 ± 0.72 ns	5986.66 ± 3.323	78.67 ± 3.32 ns	8.16 ± 1.7 ns	17.66 ± 3.44 ns

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test
ns – non significant when compared to control groups .
PREM – Pusundar Rama Bana Mathirai

Table 3

Effect of Siddha formulation (PRBM) on Biochemical markers of liver and kidney on 15 days after the repeated oral dosing (500 mg/kg/po) in rats

Groups	AST (IU/L)	ALT (IU/L)	Cholestrol (mg/dl)	Urea (mg/100ml)	Uric acid (mg/ 100ml)
Normal	72.48±0.23	30.40 ± 0.81	45.09 ± 0.97	24.56 ± 0.37	1.88 ± 0.50
PRBM (500mg/kg/p.o)	72.55±5.92 ns	35.13 ± 2.67 ns	42.69 ± 0.67 ns	30.60 ± 0.69 ns	3.01 ± 0.35 ns

N=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test
Ns – non significant when compared to control groups.
PREM - Pusundar Rama Bana Mathira

Table 4

Anti oxidant activity of Siddha Formulation (PRBM)
on 15 days after the repeated oral dosing (500 mg/kg)

Groups	**LPO** **umol/gram protein**	**GSH** **Umol/gram protein**
Control	0.63 ± 1.37	45.28 ± 2.31
PRBM (500mg/kg/p.o)	$0.42 \pm 3.90^{***}$	$57.31 \pm 0.35^{***}$

N=6; Values are expressed as mean ± S.D followed by Student T- Test.
$^{***}P<0.001$ as compared with control.
PREM - Pusundar Rama Bana Mathirai

4.0 REFERENCES

Barham D and Trinder, P.Analyst 1972:97:142.

Coulambe G.G and Favrean L.A.Clin.Chem., (1965), 11, 624.

Ghai C.L. A text book of practical physiology, Jaypee Brothers, India 1995; p.119-202.

John MB. Laboratory Medicine Haematology. 4th Ed. C.V. Mosby co, St.Louis, 1972;p.1198-1209.

Kanai L Mukherjee. A text book of medical laboratory technology. A procedure manual for routine diagnostic tests. Tata McGraw Hill Publishing company ltd. 1999; **1**:p.265-276.

King E.J and Armstrong A.R (1934), Can.Med.Ass.J., 31, 376.

Moron M.S, Difieree J.W and Mannerwik K.B. Levels of glutathione, glutathione reductase and glutathione s- transferase activities in rat lung and liver. Biochem.Biophy Acta 1979;582:67-68.

Reitman S and Frankel S (1957), Am.J.Clin.path., **28**, 56

Tenscher, A and Richterich, P. Schweiz Med. Wschr.1971 : 101:345 and 390.

Yagi K. Simple fluorimetric assay for lipid peroxide in blood plasma. Biochem.Med.1976; 15:212-215.

Annexure 3:

Forms...

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47.

DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF *'Pusundar Rama Bana Mathirai'* AND *'Manosilai Ennai'* FOR THE TREATMENT OF *'Ven Kuttam (Vitiligo)'*.

CONSENT FORM

CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all details about the study in the terms readily understood by the patient.

Signature…….

Date…… Name……

CONSENT BY PATIENT

I have been informed to my satisfaction, by the attending physician, the purpose of the clinical trial, and the nature of drug treatment and follow-up including the laboratory investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so.

I, exercising my free power of choice, hereby give my consent to be included as a subject in the clinical trial of '*PusundarRamaBanaMathirai' and 'Manosilai Ennai'* for the management of 'Ven Kuttam (Vitiligo)'.

Signature…….

Date…… Name……

Signature of witness…….

Date…… Name……

Relationship…….

NATIONAL INSTITUTE OF SIDDHA

AYODHIDOSS PANDIDHAR HOSPITAL, CHENNAI – 47.

POST GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF *PUSUNDAR RAMABANA MATHIRAI* AND *MANOSILAI ENNAI* FOR THE TREATMENT OF *VEN KUTTAM (VITILIGO)*

FORM I – PATIENT PROFORMA/CASE SHEET

1. OP/ IP No: 2. BED No: 3. Sl. No:

4. NAME: 5. AGE: 6. GENDER:

7. OCCUPATION: 8. SOCIAL STATUS

9. DATE OF ADMISSION: 10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

Lecturer **HOD**

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12. COMPLAINTS & DURATION:

13. HISTORY OF PRESENT ILLNESS:

14. PAST HISTORY:

15. FAMILY HISTORY

16. MENSTRUAL HISTORY (If applicable):

17. HABITS: Yes No

1. Smoker ☐ ☐
2. Alcoholic ☐ ☐
3. Betel nut chewer ☐ ☐
4. Non-Vegetarian/Vegetarian ☐ ☐
5. Drug addiction ☐ ☐

18. GENERAL EXAMINATION:

1. Body weight [Kg] :
2. Height [cm] :
3. Body Temperature [F] :
4. Blood Pressure (mmHg) :
5. Pulse Rate /min. :
6. Heart Rate / min. :
7. Respiratory Rate /min. :

		Yes	No
8. Pallor	:	☐	☐
9. Jaundice	:	☐	☐
10. Clubbing	:	☐	☐
11. Cyanosis	:	☐	☐
12. Pedal Oedema	:	☐	☐
13. Lymphadenopathy	:	☐	☐
14. Jugular venous pulsation	:	☐	☐

19. CLINICAL EXAMINATIONOF SKIN:

1. Initial lesion :
2. Anatomical location :
3. Colour : Blackish white (Grey) ☐ Pink ☐ White ☐
4. Size of lesion (length in cm) :
5. Shape : Irregular ☐ Round ☐ Dispersed ☐
6. Borders : Elevated ☐ Diffuse ☐
7. Swelling : Present ☐ Absent ☐
8. Erythema : Present ☐ Absent ☐
9. Sensation :
   Pain ☐ Normal ☐ : Paraesthesia ☐
   Numbness ☐ Burning ☐
   Pricking ☐
10. Relapsing nature ☐ ☐ ☐
11. Stage:
12. Depigmentation of skin : Present ☐ Absent ☐
13. Scaling : Present ☐ Absent ☐
14. Crusting : Present ☐ Absent ☐
15. Oozing : Present ☐ Absent ☐
16. Maccules : Present ☐ Absent ☐
17. Papules : Present ☐ Absent ☐
18. Vesicles : Present ☐ Absent ☐
19. Pustules : Present ☐ Absent ☐
20. Palpation Normal ☐ Smooth ☐ Rough ☐
    Warm ☐ Cold ☐

CLINICAL ASSESSMENT:

EXAMINATION OF OTHER SYSTEMS:

	Normal	Abnormal
54. CVS	☐	☐
55. RS	☐	☐
56. CNS	☐	☐
57. ABDOMEN	☐	☐
58. GENITO-URINARY	☐	☐
59. ENDOCRINOLOGY	☐	☐

SIDDHA ASPECTS

60. NILAM:

1. Kurinji ☐ 2. Mullai ☐ 3. Marutham ☐ 4. Neithal ☐ 5. Paalai ☐

61. KAALAM:

1. Kaar Kaalam ☐ 2. Koothir Kaalam ☐ 3. Munpani Kaalam ☐
4. Pinpani Kaalam ☐ 5. Ilavenir Kaalam ☐ 6. Muduvenir Kaalam ☐

62. YAAKKAI:

1. Vatham ☐ 2. Pitham ☐ 3. Kabam ☐
4. Vathapitham ☐ 5. Pithavatham ☐ 6. Kabavatham ☐
7. Vathakabam ☐ 8. Pithakabam ☐ 9. Kabapitham ☐

63. GUNAM:

1. Sathuvam ☐ 2. Rasatham ☐ 3. Thamasam ☐

64. IYMPORIGAL:

	Normal	**Affected**	
1. Mei	☐	☐	……..
2. Vaai	☐	☐	……...
3. Kan	☐	☐	……
4. Mookku	☐	☐	……

5. Sevi ☐ ☐ ……

65. KANMENDHIRIUM / KANMAVIDAYAM:

	Normal	Affected	
1. Kai	☐	☐	……...
2. Kaal	☐	☐	……...
3. Vaai	☐	☐	……..
4. Eruvaai	☐	☐	……..
5. Karuvaai	☐	☐	……..

66. UYIR THATHUKKAL:

67. VATHAM:

	Normal	Affected	
1. Piraanan	☐	☐	……
2. Abaanan	☐	☐	……
3. Viyaanan	☐	☐	……
4. Uthaanan	☐	☐	……
5. Samaanan	☐	☐	…….
6. Naagan	☐	☐	…….
7. Koorman	☐	☐	…….
8. Kirukaran	☐	☐	……
9. Devathathan	☐	☐	……
10. Dhananjeyan	☐	☐	……

68. PITHAM :

	Normal	Affected	
1. Analam	☐	☐	…….
2. Ranjagam	☐	☐	…….
3. Saathagam	☐	☐	……..
4. Aalosagam	☐	☐	…….
5. Praasagam	☐	☐	…….

69. KABAM:

	Normal	Affected	
1. Avalambagam	☐	☐	……
2. Kilethagam	☐	☐	……
3. Pothagam	☐	☐	……
4. Tharpagam	☐	☐	……..……...
5. Santhigam	☐	☐	……

70. UDAL THAATHUKKAL: **Normal** **Affected**

1. Saaram ☐ ☐ ……..
2. Senneer ☐ ☐ ……..
3. Oon ☐ ☐ ……..
4. Kozhuppu ☐ ☐ ……..
5. Enbu ☐ ☐ ……...
6. Moolai ☐ ☐ …….
7. Sukkilam / Suronitham ☐ ☐ ……...

71. ENVAGAI THERVUGAL:

1 **. Naadi** …….

Normal **Affected**

2. **Sparisam** ☐ ☐ ……..
3. **Naa** ☐ ☐ ……..
4. **Niram** ☐ ☐ ……..
5. **Mozhi** ☐ ☐ ……..
6. **Vizhi** ☐ ☐ ……..
7. **Malam**

Normal **Affected**

a. Niram ☐ ☐ ……..
b. Nurai ☐ ☐ ……..
c. Kirumi ☐ ☐ ……..
d. Thanmai:

i. Irugal ☐ ii. Ilagal ☐

8. Moothiram:

a. NEERKURI:

Normal **Affected**

a. Niram ☐ ☐ ……..
b. Manam ☐ ☐ ……..
c. Edai ☐ ☐ ……..
d. Nurai ☐ ☐ ……..
e. Enjal ☐ ☐ ……..

b. NEIKURI: …….

Vatha Neer ☐ Pitha Neer ☐ Kaba Neer ☐

72. LABORATORY INVESTIGATIONS:
I. BLOOD:

73. TC (Cells/Cumm):

74. DC (%): N L M E

75. ESR (mm) : ½ hr 1 hr

76. Hb (gm%)

Blood Sugar (mg %):

77. Fasting 78. Post Prandial

79. Serum Cholesterol (mg %):

80. Blood urea (mg %):

81. Serum creatinine:

82. SGOT & SGPT:

II. **URINE:**

83. Albumin:

84. Sugar:

85. Deposits**:**

86. Epithelial cells :

87. Pus cells :

88. Red blood cells :

89. Casts/Crystals :

III. **MOTION:**

90. Ova -

91. Cyst -

92. Occult blood -

93. Pus cells -

NATIONAL INSTITUTE OF SIDDHA

AYODHIDOSS PANDIDHAR HOSPITAL, CHENNAI – 47.

POST GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN TRIAL OF *'PUSUNDAR RAMA BANA MATHIRAI'* AND '*MANOSILAI ENNAI*' FOR THE TREATMENT OF ***VENKUTTAM (VITILIGO)***

FORM II – ASSESSMENT FORM

2. OP/ IP No: 2. BED No: 3. Sl. No:

4. NAME: 5. AGE: 6. GENDER:

7. DATE OF ADMISSION:

8. DATE OF ASSESSMENT: ☐☐☐☐☐☐

CLINICAL EXAMINATIONOF SKIN:

9. Initial lesion :

10. Anatomical location :

11. Colour : Blackish white (Grey) ☐ Pink ☐ White ☐

12. Size of lesion (length in cm) :

13. Shape : Irregular ☐ Round ☐ Dispersed ☐

14. Borders : Elevated ☐ Diffuse ☐

15. Swelling : Present ☐ Absent ☐

16. Erythema : Present ☐ Absent ☐

17. Sensation : Normal ☐ Paraesthesia ☐ Pain ☐
Numbness ☐ Burning ☐ Pricking ☐

18. Depigmentation of skin : Present ☐ Absent ☐

19. Scaling : Present ☐ Absent ☐

20. Crusting : Present ☐ Absent ☐

21. Oozing : Present ☐ Absent ☐

22. Maccules : Present ☐ Absent ☐

23. Papules : Present ☐ Absent ☐

24. Vesicles : Present ☐ Absent ☐

25. Pustules : Present ☐ Absent ☐

26. Palpation : Normal ☐ Smooth ☐ Rough ☐

Warm ☐ Cold ☐

RESULT:

CURED ☐ IMPROVED ☐ NO CHANGE ☐

72. LABORATORY INVESTIGATIONS:

I. BLOOD:

73.TC (Cells/Cumm):

74. DC (%): N L M E

75. ESR (mm) : ½ hr 1 hr

76. Hb (gm%)

77. Blood Sugar (mg %):

78. Fasting 78. Post Prandial

79. Serum Cholesterol (mg %):

80. Blood urea (mg %):

81. Serum creatinine:

82. SGOT & SGPT:

II. **URINE:**

83. Albumin:

84. Sugar:

85. Deposits**:**

86. Epithelial cells :

87. Pus cells :

88. Red blood cells:

89. Casts/Crystals :

III. **MOTION:**

90. Ova -

91. Cyst -

92. Occult blood -

93. Pus cells -

Bibliography...

Bibliography

1. Thirumanthiram
2. Noi Naadal Noi Mudhal Naadal- Dr.Ma. Shanmugavelu,,H.P.I.M
3. Agathiyar kanmaKaandam
4. GuruNaadi Nool
5. Dhanvanthri vaidiyam
6. Agathiyar Vaidhiyam
7. Thirumoolar karukkadai vaidhiyam
8. Pathinen siddhar naadi nool
9. Siddha Maruthuvam Sirappu –Dr.Ka.su. Uthmaraayan
10. Siddhar aruvai Maruthuvam – Dr. R. Thiagarajan, H.P.I.M
11. Aathma rakshamirtha sangiragam
12. Anuboga Vaidhya Navaneetham, Part-7, Page -63.
13. Gunapaadam Thathu jeeva vaguppu, page-273.
14. Gunapaadam Mooligai vaguppu – Dr.Ka.Sa. murugesa mudhaliyaar
15. Sadaga naadi
16. Therayar venba
17. Agathiyar kanma kaandam
18. Siddha Maruthuvanga surukkam – Dr.Ka.su. Uthamaraayan
19. Fudamentals of Biochemistry – Dr. Ambiga shanmugam
20. Practice of dermatology –Dr.T.N. Bhel
21. Pathological basis of diseases
22. Praraasa sekaram.
23. http://medicalcenter.osu.edu/patientcare/patient_education/